

STIC Search Report

EIC 1700

STIC Database Tracking Number: 220634

TO: Amy T Lang

Location:

Art Unit : 3731

April 6, 2007

Case Serial Number: 10820311

From: Mei Huang

Location: EIC 1700

REMSSEN 4B28

Phone: 571/272-3952

Mei.huang@uspto.gov

Search Notes

Examiner Lang,

Please feel free to contact me if you have any questions or if you would like to refine the search query.

Thank you for using STIC search services!

Mei Huang



RUSH

Access DB# 220634

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Amy Lang Examiner #: 82324 Date: 4-2-07
Art Unit: 3731 Phone Number 30 29057 Serial Number: 10/820311
Mail Box and Bldg/Room Location: RND 6D70 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Lubricant Grease for Low and High Temperature Application and Rolling Bearing
Inventors (please provide full names): Asao, Mitsunari
Egami, Masaki
Earliest Priority Filing Date: 4-4-2003

For Sequence Searches Only Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Please search all claims. Thanks.

please expedite
m J Hayes

MICHAEL J. HAYES
SUPERVISORY PATENT EXAMINER

STAFF USE ONLY

	Type of Search	Vendors and cost where applicable
Searcher: <u>IN 24</u>	NA Sequence (#) _____	STN _____
Searcher Phone #: _____	AA Sequence (#) _____	Dialog _____
Searcher Location: _____	Structure (#) <u>1</u>	Questel/Orbit _____
Date Searcher Picked Up: _____	Bibliographic _____	Dr.Link _____
Date Completed: <u>4/6/07</u>	Litigation _____	Lexis/Nexis _____
Searcher Prep & Review Time: _____	Fulltext _____	Sequence Systems _____
Clerical Prep Time: _____	Patent Family _____	WWW/Internet _____
Online Time: _____	Other _____	Other (specify) _____

Claims

1 (currently amended) Lubricant grease for low and high temperature application,
5 comprising a mixed grease and polyolefin oil, wherein said mixing grease comprises
fluorine-containing lubricant grease containing perfluoropolyether oil as a base oil
thereof and fluorocarbon resin powder as a thickening agent thereof and urea-containing
lubricant grease containing polyester oil as a base oil thereof and a urea compound as a
10 thickening agent thereof, wherein 3 to 30 parts by weight of said polyolefin oil is added
to 100 parts by weight of said mixed grease, and said polyolefin oil has a pour point of
not more than -50°C and a kinematic viscosity of 20 to 70mm²/s at 40°.

2 (canceled)

15 3 (currently amended): Lubricant grease according to claim 1, wherein said urea-
containing lubricant grease has $[[a]]$ an evaporation amount not more than 25 wt%, when
said urea-containing lubricant grease is kept at 200 °C for 250 hours.

20 4 (currently amended): Lubricant grease according to claim 3, wherein said polyester oil
is an aromatic ester compound of monovalent alcohol having 7 to 22 carbon atoms and
aromatic tricarboxylic or tetracarboxylic acid or derivatives thereof and/or aliphatic ester
compound of monovalent carboxylic acid having 7 to 22 carbon atoms and
~~trimethylpropane trimethylolpropane, pentaerythritol or dipentaerythritol~~
25 dipentaerythritol.

25 5 (original): Lubricant grease according to claim 4, wherein said polyester oil is an
aromatic ester compound of monovalent alcohol having 7 to 22 carbon atoms and
aromatic tricarboxylic or tetracarboxylic and acid or derivatives thereof.

30 6 (original): Lubricant grease according to claim 3, wherein a urea compound serving as
a base oil of said urea-containing lubricant grease is shown by a chemical formula
below:



L28 1-20

where R_3 is an aromatic group; R_1 and R_2 are selected one among an aliphatic group, and alicyclic group, and an aromatic group respectively; R_1 and R_2 are to be the same or different from each other.

5 7 (original): Lubricant grease according to claim 3, wherein for 100 wt% of an entire amount of said urea-containing lubricant grease, 70 to 95 wt% of said ester oil and 30 to 5 wt% of said urea compound are mixed with each other.

10 8 (original): Lubricant grease according to claim 1, wherein 100 wt% of an entire amount of said fluorine-containing lubricant grease, 70 to 90 wt% of said perfluoropolyether oil and 10 to 30 wt% of said fluorocarbon resin powder are mixed with each other.

15 9 (original): Lubricant grease according to claim 8, wherein said fluorocarbon resin powder is ~~polytetrafluoroethylene resin powder~~ *teflon #*.

20 10 (original): Lubricant grease according to claim 1, wherein said mixed grease contains 25 to 70 wt% of said fluorine-containing lubricant grease and 30 to 75 wt% of said urea-containing lubricant grease.

21 11 (original): Lubricant grease according to claim 1, wherein said mixed grease is applied for electric auxiliaries for a car.

25 12 (original): A rolling bearing comprising an inner ring; an outer ring concentrate with said inner ring; a plurality of rolling elements disposed between the inner ring and said outer ring; and lubricant grease sealed on a periphery of said rolling elements, wherein said lubricant grease is the grease for low and high temperature application according to claim 1.

30 13 (original): A rolling bearing according to claim 12, wherein said rolling bearing is applied for electric auxiliaries of a car.



STIC Search Results Feedback Form

EIC17000

Questions about the scope or the results of the search? Contact *the EIC searcher* or contact:

Kathleen Fuller, EIC 1700 Team Leader
571/272-2505 REMSEN 4B28

Voluntary Results Feedback Form

- I am an examiner in Workgroup: Example: 1713
➤ Relevant prior art **found**, search results used as follows:

- ☐ 102 rejection
- ☐ 103 rejection
- ☐ Cited as being of interest.
- ☐ Helped examiner better understand the invention.
- ☐ Helped examiner better understand the state of the art in their technology.

Types of relevant prior art found:

- ☐ Foreign Patent(s)
- ☐ Non-Patent Literature
(journal articles, conference proceedings, new product announcements etc.)

- Relevant prior art **not found**:

- ☐ Results verified the lack of relevant prior art (helped determine patentability).
- ☐ Results were not useful in determining patentability or understanding the invention.

Comments:

Drop off or send completed forms to EIC1700 REMSEN 4B28

=> fil reg

FILE 'REGISTRY' ENTERED AT 17:20:07 ON 06 APR 2007

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STRUCTURE FILE UPDATES: 5 APR 2007 HIGHEST RN 929247-80-3

DICTIONARY FILE UPDATES: 5 APR 2007 HIGHEST RN 929247-80-3

New CAS Information Use Policies, enter HELP USAGETERMS for details.

TSCA INFORMATION NOW CURRENT THROUGH December 2, 2006

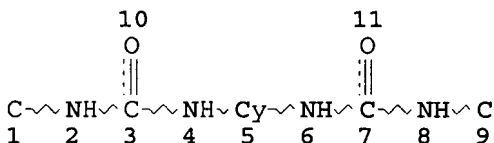
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REGISTRY includes numerically searchable data for experimental and predicted properties as well as tags indicating availability of experimental property data in the original document. For information on property searching in REGISTRY, refer to:

<http://www.cas.org/ONLINE/UG/regprops.html>

=> d l9 que stat

L7 STR



NODE ATTRIBUTES:

NSPEC IS RC AT 1

NSPEC IS RC AT 9

DEFAULT MLEVEL IS ATOM

GGCAT IS UNS AT 5

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 11

STEREO ATTRIBUTES: NONE

L9 2925 SEA FILE=REGISTRY SSS FUL L7

100.0% PROCESSED 33471 ITERATIONS

2925 ANSWERS

SEARCH TIME: 00.00.01

=> d his nofile

(FILE 'HOME' ENTERED AT 15:35:01 ON 06 APR 2007)

FILE 'HCAPLUS' ENTERED AT 15:35:12 ON 06 APR 2007

L1 1 SEA ABB=ON US2004198612/PN

FILE 'REGISTRY' ENTERED AT 15:35:44 ON 06 APR 2007

L2 7 SEA ABB=ON (101-68-8/BI OR 106-49-0/BI OR 111-86-4/BI
OR 115-77-5/BI OR 126-58-9/BI OR 57-13-6/BI OR 77-99-6/BI
)
D SCA
L3 1 SEA ABB=ON PLU=ON 77-99-6/RN
L4 1 SEA ABB=ON PLU=ON PENTAERYTHRITOL/CN
L5 1 SEA ABB=ON PLU=ON DIPENTAERYTHRITOL/CN
L6 1 SEA ABB=ON PLU=ON 57-13-6/RN

FILE 'LREGISTRY' ENTERED AT 16:17:31 ON 06 APR 2007

L7 STR

FILE 'REGISTRY' ENTERED AT 16:20:29 ON 06 APR 2007

L8 50 SEA SSS SAM L7
L9 2925 SEA SSS FUL L7
SAV L9 LAN311/A

FILE 'HCAPLUS' ENTERED AT 16:23:51 ON 06 APR 2007

L10 2856 SEA ABB=ON PLU=ON (L3 OR L4 OR L5) (L) RACT+ALL/RL
L11 11626 SEA ABB=ON PLU=ON LUBRICA? (2A) GREASE?
L12 1049 SEA ABB=ON PLU=ON (ADDITIVE? OR ADJUVANT? OR AUXILIAR?)
(3A) (CAR OR AUTO# OR AUTOMO? OR VEHICLE)
L13 1 SEA ABB=ON PLU=ON L10 (L) (L11 OR L12)
L14 2348 SEA ABB=ON PLU=ON POLYESTER? (2A) OIL
L15 QUE ABB=ON PLU=ON LUBRIC? OR ANTIWEAR? OR ANTICORRO?
OR ANTIOXID? OR ANTIRUST? OR ANTIFRIC? OR ANTI (W) (WEAR?
OR CORRO? OR OXID? OR RUST? OR FRIC?) OR ABRASION (W) RESIS
T?
L16 QUE ABB=ON PLU=ON ((FLUORO? OR FLUORI? OR F) (W) (CONTAIN
? OR CONTG#) OR FLUORO? OR FLUORI?) (2A) (POLYM? OR
COPOLYM? OR HOMOPOLYM? OR RESIN?)
L17 QUE ABB=ON PLU=ON FLUOROPOLYMER# OR PERFLUOROPOLYMER#
OR PER (W) FLUOROPOLYMER#
L18 QUE ABB=ON PLU=ON POLYESTER
L19 QUE ABB=ON PLU=ON POLYOLEFIN
L20 QUE ABB=ON PLU=ON POLYETHYLENE# OR POLYETHENE# OR PE
OR POLYPROPYLENE# OR POLYPROPENE# OR PP OR POLYBUTYLENE#
OR POLYISOBUTYLENE# OR POLYBUTENE# OR POLYISOBUTENE#
L21 QUE ABB=ON PLU=ON POLY (W) (ETHYLENE# OR ETHENE# OR
PROPYLENE# OR PROPENE# OR BUTYLENE# OR ISOBUTYLENE# OR
BUTENE#)
L22 QUE ABB=ON PLU=ON (ETHYLEN## OR PROPYLEN## OR BUTYLEN##
OR BUTEN## OR OLEFIN##) (A) (POLYMER? OR POLYM# OR
HOMOPOLYMER? OR HOMOPOLYM# OR RESIN?)
L23 4367 SEA ABB=ON PLU=ON L6/D
L24 23831 SEA ABB=ON PLU=ON L6 (L) MOA+ALL/RL
L25 2611 SEA ABB=ON PLU=ON L23 AND L24
L26 889 SEA ABB=ON PLU=ON L9
L27 32 SEA ABB=ON PLU=ON L9 (L) (L11 OR L12 OR L15)
L28 20 SEA ABB=ON PLU=ON L27 AND (L11 OR L12)
L29 QUE ABB=ON PLU=ON UREA (A) (CONTAIN? OR CONTG#)
L30 QUE ABB=ON PLU=ON PERFLUOR? (A) POLYETHER? OR PERFLUOROPOLY
LYETHER?
L31 18557 SEA ABB=ON PLU=ON (L16 OR L17 OR L30) AND (L19 OR L20
OR L21 OR L22)
L32 3 SEA ABB=ON PLU=ON L31 AND L29
L33 1 SEA ABB=ON PLU=ON L32 AND (L11 OR L12 OR L15)
L34 6426 SEA ABB=ON PLU=ON L31 AND L18

L35 43 SEA ABB=ON PLU=ON L31 AND L14
 L36 10 SEA ABB=ON PLU=ON L35 AND (L11 OR L12 OR L15)
 L37 15 SEA ABB=ON PLU=ON L34 AND L10
 L38 2 SEA ABB=ON PLU=ON L37 AND (L11 OR L12 OR L15)
 L39 11 SEA ABB=ON PLU=ON L33 OR L36 OR L38
 L40 128 SEA ABB=ON PLU=ON L10(L) (L11 OR L12 OR L15)
 L41 10 SEA ABB=ON PLU=ON L40 AND (L11 OR L12)
 L42 66 SEA ABB=ON PLU=ON L25 AND (L11 OR L12)
 L43 QUE ABB=ON PLU=ON THICKEN?(2A) (AGENT? OR ADDITIVE? OR
 COMPOUND? OR COMPD# OR CMPD# OR CPD#)
 L44 39 SEA ABB=ON PLU=ON L42 AND L43
 L45 14 SEA ABB=ON PLU=ON L37 AND (1907-2003)/PY,PRY,AY
 L46 38 SEA ABB=ON PLU=ON L44 AND (1907-2003)/PY,PRY,AY
 L47 5 SEA ABB=ON PLU=ON L46 AND (L16 OR L17)
 L48 4 SEA ABB=ON PLU=ON L47 NOT L1
 L49 10 SEA ABB=ON PLU=ON L41 AND (1907-2003)/PY,PRY,AY
 L50 9 SEA ABB=ON PLU=ON L49 NOT (L45 OR L48)
 L51 18 SEA ABB=ON PLU=ON L28 AND (1907-2003)/PY,PRY,AY
 L52 18 SEA ABB=ON PLU=ON L51 NOT (L45 OR L48 OR L50)
 L53 1373 SEA ABB=ON PLU=ON (FLUOROCARBON? OR FLUOR?(A) CARBON?
 OR POLYTETRAFLUOROETHYLENE OR TEFLON) (3A) POWDER?
 L54 20 SEA ABB=ON PLU=ON L53 AND (L11 OR L12)
 L55 7 SEA ABB=ON PLU=ON L54 AND L43
 L56 5 SEA ABB=ON PLU=ON L55 AND (1907-2003)/PY,PRY,AY
 L57 4 SEA ABB=ON PLU=ON L56 NOT (L45 OR L48 OR L50 OR L52)
 L58 1 SEA ABB=ON PLU=ON L39 NOT (1907-2003)/PY,PRY,AY

=> fil hcap

FILE 'HCAPLUS' ENTERED AT 17:20:14 ON 06 APR 2007

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FILE LAST UPDATED: 5 Apr 2007 (20070405/ED)

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=> d l45 ibib abs hitstr hitting 1-14

L45 ANSWER 1 OF 14 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:33676 HCAPLUS

DOCUMENT NUMBER: 142:95943

TITLE: Recyclable radiation-curable hard coating

compositions showing good abrasion resistance and lubricity, and plastic moldings coated with them

INVENTOR(S): Kondo, Satoshi; Higuchi, Toshihiko; Yamamoto, Hiroshi

PATENT ASSIGNEE(S): Asahi Glass Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 20 pp.
CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005008878	A	20050113	JP 2004-158013	20040527

PRIORITY APPLN. INFO.: JP 2003-152193 A 20030529

AB The compns. contain radiation-curable monomers 100, lubricants 0.01-10, radiation-sensitive initiators 0.1-10, colloidal silica 0.1-500 parts as solids content, and ≥ 1 organic solvents having b.p. 100-200°, where the lubricants bear radiation-curable functional groups, ≥ 1 groups chosen from (SiR₁R₂O)_m, (CF₂CF₂O)_n, [CF₂CF(CF₃)O]_p, [(CF₂)₃O]_q, and (CF₂O)_r [R₁, R₂ = C₁-8 (fluoro)alkyl, Ph; m = 1-1000; n, p, q, r = 1-100], and ≥ 1 groups chosen from C₆-20 alkylene, [(CH₂)₂O]_x(CH₂CHMeO)_y, and (COCuH₂uO)_t (x, y = 0-100; x + y = 5-100; u = 3-5; t = 1-20). Thus, a composition containing dipentaerythritol polyacrylate-HDI copolymer 80, X 22-170BX (OH-terminated dimethylsilicone oil)-ε-caprolactone diblock copolymer-2-methacryloyloxyethyl isocyanate reaction product 1.0, 2-methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one 4.0, colloidal silica coated with 3-metcaptopropyltrimethoxysilane hydrolyzate 75.0, and isopentyl acetate 130.0 g was applied on an aromatic polycarbonate sheet, dried, and irradiated with UV to give a hard coating.

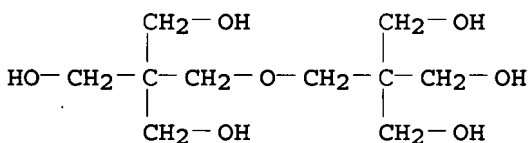
IT 126-58-9DP, Dipentaerythritol, polyacrylate, polymer with HDI

RL: IMF (Industrial manufacture); POF (Polymer in formulation); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)

(recyclable radiation-curable hard coating compns. showing good abrasion resistance and lubricity for plastic moldings)

RN 126-58-9 HCAPLUS

CN 1,3-Propanediol, 2,2'-[oxybis(methylene)]bis[2-(hydroxymethyl)-(9CI) (CA INDEX NAME)]



- IC ICM C09D004-00
ICS B32B027-08; C09D007-12; C09D167-04; C09D171-00; C09D183-04
- CC 42-10 (Coatings, Inks, and Related Products)
Section cross-reference(s): 38
- ST radiation curable colloidal silica coating lubricity;
methacrylyloethyl terminated polysiloxane **polyester**
lubricant coating; isopentyl acetate solvent colloidal silica
coating; abrasion resistance radiation curable polyurethane acrylate
coating; molded plastic colloidal silica hard coating lubricity;
polycarbonate sheet colloidal silica hard coating
- IT Polysiloxanes, uses
RL: IMF (Industrial manufacture); POF (Polymer in formulation); RCT
(Reactant); TEM (Technical or engineered material use); PREP
(Preparation); RACT (Reactant or reagent); USES (Uses)
(**polyester**-, block, diblock, methacrylate-terminated,
reactive lubricants; recyclable radiation-curable hard coating
compns. showing good abrasion resistance and lubricity for
plastic moldings)
- IT Polyethers, uses
RL: IMF (Industrial manufacture); POF (Polymer in formulation); RCT
(Reactant); TEM (Technical or engineered material use); PREP
(Preparation); RACT (Reactant or reagent); USES (Uses)
(**polyester**-, fluorine-containing, block, diblock,
methacrylate-terminated, reactive lubricants; recyclable
radiation-curable hard coating compns. showing good abrasion
resistance and lubricity for plastic moldings)
- IT **Fluoropolymers**, uses
RL: IMF (Industrial manufacture); POF (Polymer in formulation); RCT
(Reactant); TEM (Technical or engineered material use); PREP
(Preparation); RACT (Reactant or reagent); USES (Uses)
(**polyester**-polyether-, block, diblock,
methacrylate-terminated, reactive lubricants; recyclable
radiation-curable hard coating compns. showing good abrasion
resistance and lubricity for plastic moldings)
- IT **Polyesters**, uses
RL: IMF (Industrial manufacture); POF (Polymer in formulation); RCT
(Reactant); TEM (Technical or engineered material use); PREP
(Preparation); RACT (Reactant or reagent); USES (Uses)
(polyether-, fluorine-containing, block, diblock,
methacrylate-terminated, reactive lubricants; recyclable
radiation-curable hard coating compns. showing good abrasion
resistance and lubricity for plastic moldings)
- IT **Polyesters**, uses
RL: IMF (Industrial manufacture); POF (Polymer in formulation); RCT
(Reactant); TEM (Technical or engineered material use); PREP
(Preparation); RACT (Reactant or reagent); USES (Uses)
(siloxane-, block, diblock, methacrylate-terminated, reactive
lubricants; recyclable radiation-curable hard coating compns.
showing good abrasion resistance and lubricity for plastic
moldings)
- IT 502-44-3DP, ϵ -Caprolactone, diblock copolymer with
hydroxy-terminated **perfluoropolyether**, reaction product
with methacryloyloxyethyl isocyanate 37541-11-0DP, fluorinated
819850-20-9DP, reaction products with 2-methacryloyloxyethyl
isocyanate
RL: IMF (Industrial manufacture); POF (Polymer in formulation); RCT
(Reactant); TEM (Technical or engineered material use); PREP
(Preparation); RACT (Reactant or reagent); USES (Uses)
(reactive lubricant; recyclable radiation-curable hard coating

- comps. showing good abrasion resistance and lubricity for plastic moldings)
- IT 30674-80-7DP, 2-Methacryloyloxyethyl isocyanate, reaction products with diblock polysiloxane-**polyester** or diblock **perfluoro-polyether-polyester**
 RL: IMF (Industrial manufacture); POF (Polymer in formulation); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
 (reactive lubricants; recyclable radiation-curable hard coating comps. showing good abrasion resistance and lubricity for plastic moldings)
- IT 126-58-9DP, Dipentaerythritol, polyacrylate, polymer with HDI 822-06-0DP, Hexamethylene diisocyanate, polymer with dipentaerythritol polyacrylate
 RL: IMF (Industrial manufacture); POF (Polymer in formulation); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
 (recyclable radiation-curable hard coating comps. showing good abrasion resistance and lubricity for plastic moldings)
- IT 2641-34-1 9004-74-4, **Polyethylene** glycol monomethyl ether
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (recyclable radiation-curable hard coating comps. showing good abrasion resistance and lubricity for plastic moldings)

L45 ANSWER 2 OF 14 HCAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 2004:825103 HCAPLUS
 DOCUMENT NUMBER: 141:316971
 TITLE: Lubricant grease for low and high temperature
 INVENTOR(S): Asao, Mitsunari; Egami, Masaki
 PATENT ASSIGNEE(S): Japan
 SOURCE: U.S. Pat. Appl. Publ., 8 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004198612	A1	20041007	US 2004-820311	20040408
JP 2004346298	A	20041209	JP 2004-3571	20040109
DE 102004019872	A1	20041118	DE 2004-102004019872	20040423
JP 2006045577	A	20060216	JP 2005-249580	20050830
PRIORITY APPLN. INFO.:			JP 2003-125657	A 200304

30

JP 2004-3571

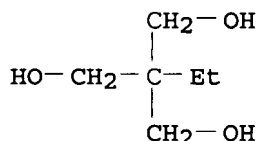
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200401

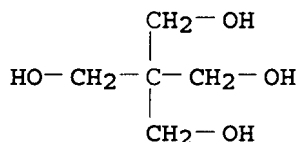
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OTHER SOURCE(S): MARPAT '141:316971

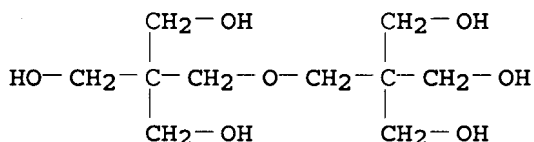
- AB A rolling bearing, for application in elec. auxiliaries for a car, durable owing to high resistance to high temps. and capable of restraining noises from being generated at low temps.; and lubricant grease, for low and high temperature application, which can be sealed in the rolling bearing. The lubricant grease includes 100 parts by weight of a mixture of fluorine-containing lubricant grease containing **perfluoropolyether** oil as a base oil thereof and **fluorocarbon resin** powder as a thickening agent thereof and urea-containing lubricant grease containing **polyester** oil as a base oil thereof and a urea compound as a thickening agent thereof; and 3 to 30 parts by weight of **polyolefin** oil added to the mixed grease. The **polyolefin** oil has a pour point of not more than -50°. and a kinematic viscosity of 10 to 70 mm² /s at 40°.
- IT 77-99-6, Trimethylolpropane 115-77-5, Pentaerythritol, reactions 126-58-9
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (lubricant grease for low and high temperature suitable for use in rolling bearings in elec. auxiliaries for cars)
- RN 77-99-6 HCAPLUS
- CN 1,3-Propanediol, 2-ethyl-2-(hydroxymethyl)- (CA INDEX NAME)



- RN 115-77-5 HCAPLUS
- CN 1,3-Propanediol, 2,2-bis(hydroxymethyl)- (CA INDEX NAME)



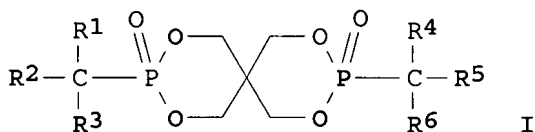
- RN 126-58-9 HCAPLUS
- CN 1,3-Propanediol, 2,2'-[oxybis(methylene)]bis[2-(hydroxymethyl)- (9CI) (CA INDEX NAME)



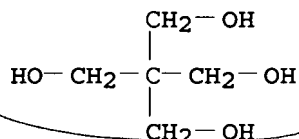
IC ICM C10M111-04
ICS C10M123-04
INCL 508182000; 508485000; 508496000; 508552000; 508582000
CC 51-8 (Fossil Fuels, Derivatives, and Related Products)
IT **Fluoropolymers**, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(polyether-, perfluoro; lubricant grease for
low and high temperature suitable for use in rolling bearings in elec.
auxiliaries for cars)
IT **Fluoropolymers**, uses
RL: MOA (Modifier or additive use); USES (Uses)
(thickening agents; lubricant grease for low and high temperature
suitable for use in rolling bearings in elec. auxiliaries for
cars)
IT 77-99-6, Trimethylolpropane 101-68-8, Diphenylmethane
diisocyanate 106-49-0, p-Toluidine, reactions 111-86-4,
Octylamine 115-77-5, Pentaerythritol, reactions
126-58-9
RL: RCT (Reactant); RACT (Reactant or reagent)
(lubricant grease for low and high temperature suitable for use in
rolling bearings in elec. auxiliaries for cars)

L45 ANSWER 3 OF 14 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2004:139336 HCAPLUS
DOCUMENT NUMBER: 140:182448
TITLE: Halogen-free fire-resistant aromatic
polyester-based resin compositions and
their moldings
INVENTOR(S): Yamanaka, Katsuhiko; Taketani, Yutaka
PATENT ASSIGNEE(S): Teijin Chemicals Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 37 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004051917	A	20040219	JP 2002-214951	200207 24
PRIORITY APPLN. INFO.: JP 2002-214951				200207 24
OTHER SOURCE(S): MARPAT 140:182448				
GI				



- AB Title compns., also having good hydrolysis resistance, comprise 100 parts resins containing $\geq 60\%$ aromatic **polyesters**, 1-100 parts organic phosphates I [R1, R4 = H, C1-5 aliphatic hydrocarbyl, (substituted) Ph, (substituted) naphthyl, (substituted) anthryl; R2, R3; R5, R6 = (substituted) Ph, (substituted) naphthyl, (substituted) anthryl], 0.1-100 parts alkali and/or alkaline earth metal salts, 0-50 parts fireproof improver resins, and 0-200 parts fillers. A composition containing TRB-H 100, 2,4,8,10-tetraoxa-3,9-diphosphaspiro[5,5]undecane 3,9-bis(diphenylmethyl)-3,9-dioxide (prepared from diphenylmethylphosphonic dichloride and pentaerythritol) 15, and CaCO₃ 5 parts was extruded and molded into a test piece showing UL94 test (for 1.6-mm thickness) V-0 and flexural strength retention $\geq 70\%$ after 24 h under 120° and 100% relative humidity.
- IT 115-77-5, Pentaerythritol, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (diphosphaspiro compound- and alkali (or alkaline earth) salt-containing aromatic **polyester**-based compns. with fire and hydrolysis resistance)
- RN 115-77-5 HCAPLUS
 CN 1,3-Propanediol, 2,2-bis(hydroxymethyl)- (CA INDEX NAME)



- IC ICM C08L067-00
 ICS C08J005-00; C08K003-00; C08K003-24; C08K005-5357; C08L101-00
- CC 37-6 (Plastics Manufacture and Processing)
- ST hydrolysis resistance fireproof arom **polyester** compn
 pentaerythritol diphenylmethylphosphonate; alkali metal salt
 diphosphaspiro compd fireproof arom **polyester** compn; alk
 earth salt diphosphaspiro compd fireproof, arom **polyester**
 compn
- IT Glass fibers, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (ECS 03T187H; diphosphaspiro compound- and alkali (or alkaline earth)
 salt-containing aromatic **polyester**-based compns. with fire and
 hydrolysis resistance)
- IT **Polyesters**, uses
 RL: POF (Polymer in formulation); TEM (Technical or engineered
 material use); USES (Uses)
 (TR 8580H, TR 8550T; diphosphaspiro compound- and alkali (or alkaline
 earth) salt-containing aromatic **polyester**-based compns. with
 fire and hydrolysis resistance)
- IT **Polyesters**, uses
 RL: POF (Polymer in formulation); TEM (Technical or engineered
 material use); USES (Uses)
 (aromatic; diphosphaspiro compound- and alkali (or alkaline earth)
 salt-containing aromatic **polyester**-based compns. with fire and
 hydrolysis resistance)
- IT Fillers
 (diphosphaspiro compound- and alkali (or alkaline earth) salt-containing
 aromatic **polyester**-based compns. with fire and hydrolysis
 resistance)

- IT Epoxy resins, uses
 Fluoropolymers, uses
 ~~Fluoropolymers, uses~~
 Phenolic resins, uses
 Polyamides, uses
 Polyamides, uses
 Polycarbonates, uses
 Polyesters, uses
 Polyolefins
 Polyoxyphenylenes
 Polythiophenylenes
 RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
 (diphosphaspiro compound- and alkali (or alkaline earth) salt-containing aromatic polyester-based compns. with fire and hydrolysis resistance)
- IT Alkali metal salts
 Alkaline earth salts
 Carbonates, uses
 Polymer blends
 RL: TEM (Technical or engineered material use); USES (Uses)
 (diphosphaspiro compound- and alkali (or alkaline earth) salt-containing aromatic polyester-based compns. with fire and hydrolysis resistance)
- IT Water-resistant materials
 (fire-resistant; diphosphaspiro compound- and alkali (or alkaline earth) salt-containing aromatic polyester-based compns. with fire and hydrolysis resistance)
- IT Polyimides, uses
 RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
 (polyether-; diphosphaspiro compound- and alkali (or alkaline earth) salt-containing aromatic polyester-based compns. with fire and hydrolysis resistance)
- IT Polyethers, uses
 RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
 (polyimide-; diphosphaspiro compound- and alkali (or alkaline earth) salt-containing aromatic polyester-based compns. with fire and hydrolysis resistance)
- IT Fire-resistant materials
 (water-resistant; diphosphaspiro compound- and alkali (or alkaline earth) salt-containing aromatic polyester-based compns. with fire and hydrolysis resistance)
- IT 25038-59-9, TR 8580H, uses
 RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
 (TR 8580H, TR 8550T; diphosphaspiro compound- and alkali (or alkaline earth) salt-containing aromatic polyester-based compns. with fire and hydrolysis resistance)
- IT 24968-12-5, TRB-H
 RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
 (TRB-H, TRB-J; diphosphaspiro compound- and alkali (or alkaline earth) salt-containing aromatic polyester-based compns. with fire and hydrolysis resistance)
- IT 9020-32-0 9052-39-5, Cyclohexanedimethanol-terephthalic acid copolymer 25134-01-4, 2,6-Xylenol homopolymer 25971-63-5, Bisphenol A-phosgene copolymer 26062-94-2, 1,4-Butylene glycol-terephthalic acid copolymer 26590-75-0, Trimethylene

glycol-terephthalic acid copolymer 52309-38-3 262266-43-3
 RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)

(assumed monomers; diphosphaspiro compound- and alkali (or alkaline earth) salt-containing aromatic **polyester**-based compns. with fire and hydrolysis resistance)

IT 475101-76-9P, 2,4,8,10-Tetraoxa-3,9-diphosphaspiro[5,5]undecane 3,9-bis(diphenylmethyl)-3,9-dioxide

RL: IMF (Industrial manufacture); MOA (Modifier or additive use);

PREP (Preparation); USES (Uses)

(diphosphaspiro compound- and alkali (or alkaline earth) salt-containing aromatic **polyester**-based compns. with fire and hydrolysis resistance)

IT 9002-84-0, Polyflon MPA FA 500 9020-73-9, Poly(ethylene naphthalate) 9053-81-0 24936-68-3, Panlite L 1225WP, uses 24938-67-8, Xyron P 402 25038-54-4, NF 8020, uses 26546-03-2, Poly(trimethylene terephthalate) 51806-50-9, Poly(butylene naphthalate) 106677-58-1, Santac

UT 61 262371-02-8 347145-17-9, Blendex 449

RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)

(diphosphaspiro compound- and alkali (or alkaline earth) salt-containing aromatic **polyester**-based compns. with fire and hydrolysis resistance)

IT 115-77-5, Pentaerythritol, reactions 776-74-9, Diphenylmethyl bromide 54767-39-4, (Diphenylmethyl)phosphonic dichloride 475101-77-0, 3,9-Bis(diphenylmethoxy)-2,4,8,10-tetraoxa-3,9-diphosphaspiro[5,5]undecane

RL: RCT (Reactant); RACT (Reactant or reagent)

(diphosphaspiro compound- and alkali (or alkaline earth) salt-containing aromatic **polyester**-based compns. with fire and hydrolysis resistance)

IT 471-34-1, Calcium carbonate, uses 513-77-9, Barium carbonate 546-93-0, Magnesium carbonate 7758-87-4, Calcium phosphate 25068-38-6, Epikote 828 99752-88-2, Sumilit PR 53195 878558-04-4, PFE 301S

RL: TEM (Technical or engineered material use); USES (Uses)

(diphosphaspiro compound- and alkali (or alkaline earth) salt-containing aromatic **polyester**-based compns. with fire and hydrolysis resistance)

L45 ANSWER 4 OF 14 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:139335 HCAPLUS

DOCUMENT NUMBER: 140:182447

TITLE: Halogen-free fire-resistant aromatic **polyester**-based resin compositions and their moldings

INVENTOR(S): Yamanaka, Katsuhiko; Taketani, Yutaka

PATENT ASSIGNEE(S): Teijin Chemicals Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 36 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

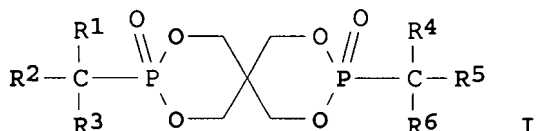
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2004051916	A	20040219	JP 2002-214950	

200207
24

PRIORITY APPLN. INFO.:

<--
JP 2002-214950200207
24OTHER SOURCE(S): MARPAT 140:182447
GI

AB Title compns., also having good hydrolysis resistance, comprise 100 parts resins containing $\geq 60\%$ aromatic **polyesters**, 1-100 parts organic phosphates I [R1, R4 = H, C1-5 aliphatic hydrocarbyl; R3, R6 = C1-5 aliphatic hydrocarbyl; R2, R5 = (substituted) Ph, (substituted) naphthyl, (substituted) anthryl], 0.1-100 parts alkali and/or alkaline earth metal salts, 0-50 parts fireproof improver resins, and 0-200 parts fillers. A composition containing TRB-H 100, 2,4,8,10-tetraoxa-3,9-diphosphaspiro[5,5]undecane 3,9-di- α -methylbenzyl-3,9-dioxide (prepared from pentaerythritol, PCl_3 , and 1-phenylethyl bromide) 15, and CaCO_3 5 parts was extruded and molded into a test piece showing UL94 test (for 1.6-mm thickness) V-0 and flexural strength retention $\geq 70\%$ after 24 h under 120° and 100% relative humidity.

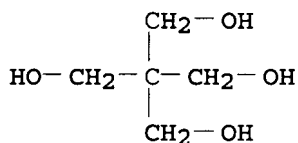
IT 115-77-5, Pentaerythritol, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)

(diphosphaspiro compound- and alkali (or alkaline earth) salt-containing aromatic **polyester**-based compns. with fire and hydrolysis resistance)

RN 115-77-5 HCAPLUS

CN 1,3-Propanediol, 2,2-bis(hydroxymethyl)- (CA INDEX NAME)



IC ICM C08L067-00

ICS C08J005-00; C08K003-00; C08K003-24; C08K005-5357; C08L101-00

CC 37-6 (Plastics Manufacture and Processing)

ST hydrolysis resistance fireproof arom **polyester** compn
pentaerythritol dimethylbenzylphosphonate; alkali metal salt
diphosphaspiro compd fireproof arom **polyester** compn; alk
earth salt diphosphaspiro compd fireproof arom **polyester**
compn

IT Glass fibers, uses

RL: TEM (Technical or engineered material use); USES (Uses)

(ECS 03T187H; diphosphaspiro compound- and alkali (or alkaline earth) salt-containing aromatic **polyester**-based compns. with fire and hydrolysis resistance)

- IT **Polyesters, uses**
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(aromatic; diphosphaspiro compound- and alkali (or alkaline earth) salt-containing aromatic **polyester**-based compns. with fire and hydrolysis resistance)
- IT **Fillers**
(diphosphaspiro compound- and alkali (or alkaline earth) salt-containing aromatic **polyester**-based compns. with fire and hydrolysis resistance)
- IT **Epoxy resins, uses**
Fluoropolymers, uses
Fluoropolymers, uses
Phenolic resins, uses
Polyamides, uses
Polyamides, uses
Polycarbonates, uses
Polyesters, uses
Polyolefins
Polyoxyphenylenes
Polythiophenylenes
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(diphosphaspiro compound- and alkali (or alkaline earth) salt-containing aromatic **polyester**-based compns. with fire and hydrolysis resistance)
- IT **Alkali metal salts**
Alkaline earth salts
Carbonates, uses
Polymer blends
RL: TEM (Technical or engineered material use); USES (Uses)
(diphosphaspiro compound- and alkali (or alkaline earth) salt-containing aromatic **polyester**-based compns. with fire and hydrolysis resistance)
- IT **Water-resistant materials**
(fire-resistant; diphosphaspiro compound- and alkali (or alkaline earth) salt-containing aromatic **polyester**-based compns. with fire and hydrolysis resistance)
- IT **Polyimides, uses**
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(polyether-; diphosphaspiro compound- and alkali (or alkaline earth) salt-containing aromatic **polyester**-based compns. with fire and hydrolysis resistance)
- IT **Polyethers, uses**
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(polyimide-; diphosphaspiro compound- and alkali (or alkaline earth) salt-containing aromatic **polyester**-based compns. with fire and hydrolysis resistance)
- IT **Fire-resistant materials**
(water-resistant; diphosphaspiro compound- and alkali (or alkaline earth) salt-containing aromatic **polyester**-based compns. with fire and hydrolysis resistance)
- IT **25038-59-9, uses**
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(TR 8580H, TR 8550T; diphosphaspiro compound- and alkali (or alkaline earth) salt-containing aromatic **polyester**-based compns. with fire and hydrolysis resistance)

- IT 24968-12-5
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(TRB-H, TRB-J; diphosphaspiro compound- and alkali (or alkaline earth) salt-containing aromatic **polyester**-based compns. with fire and hydrolysis resistance)
- IT 9020-32-0 9052-39-5, Cyclohexanedimethanol-terephthalic acid copolymer 25134-01-4, 2,6-Xylenol homopolymer 25971-63-5, Bisphenol A-phosgene copolymer 26062-94-2, 1,4-Butylene glycol-terephthalic acid copolymer 26590-75-0, Trimethylene glycol-terephthalic acid copolymer 52309-38-3 262266-43-3
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(assumed monomers; diphosphaspiro compound- and alkali (or alkaline earth) salt-containing aromatic **polyester**-based compns. with fire and hydrolysis resistance)
- IT 475101-74-7P
RL: IMF (Industrial manufacture); MOA (Modifier or additive use); PREP (Preparation); USES (Uses)
(diphosphaspiro compound- and alkali (or alkaline earth) salt-containing aromatic **polyester**-based compns. with fire and hydrolysis resistance)
- IT 947-28-4P
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(diphosphaspiro compound- and alkali (or alkaline earth) salt-containing aromatic **polyester**-based compns. with fire and hydrolysis resistance)
- IT 9002-84-0, Polyflon MPA FA 500 9020-73-9, Poly(ethylene naphthalate) 9053-81-0, Cyclohexanedimethanol-terephthalic acid copolymer, sru 24936-68-3, Panlite L 1225WP, uses 24938-67-8, Xyron P 402 25038-54-4, NF 8020, uses 26546-03-2, Poly(trimethylene terephthalate) 51806-50-9, Poly(butylene naphthalate) 106677-58-1, Santac
UT 61 262371-02-8 347145-17-9, Blendex 449
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(diphosphaspiro compound- and alkali (or alkaline earth) salt-containing aromatic **polyester**-based compns. with fire and hydrolysis resistance)
- IT 115-77-5, Pentaerythritol, reactions 585-71-7, 1-Phenylethyl bromide 7719-12-2, Phosphorous trichloride
RL: RCT (Reactant); RACT (Reactant or reagent)
(diphosphaspiro compound- and alkali (or alkaline earth) salt-containing aromatic **polyester**-based compns. with fire and hydrolysis resistance)
- IT 471-34-1, Calcium carbonate, uses 513-77-9, Barium carbonate 546-93-0, Magnesium carbonate 7758-87-4, Calcium phosphate 25068-38-6, Epikote 828 99752-88-2, Sumilit PR 53195 878558-04-4, PFE 301S
RL: TEM (Technical or engineered material use); USES (Uses)
(diphosphaspiro compound- and alkali (or alkaline earth) salt-containing aromatic **polyester**-based compns. with fire and hydrolysis resistance)

L45 ANSWER 5 OF 14 HCAPLUS COPYRIGHT 2007 ACS on STN

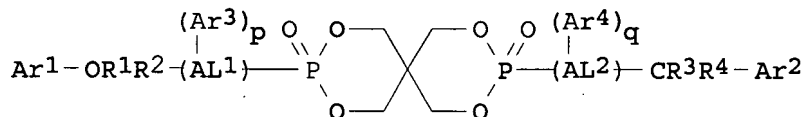
ACCESSION NUMBER: 2004:139266 HCAPLUS

DOCUMENT NUMBER: 140:182441

TITLE: Halogen-free fire-resistant polymer compositions and their moldings with good hydrolysis

INVENTOR(S): resistance
 Yamanaka, Katsuhiro; Taketani, Yutaka
 PATENT ASSIGNEE(S): Teijin Chemicals Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 37 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

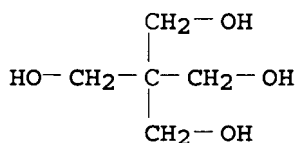
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004051819	A	20040219	JP 2002-212260	20020722
<--				
PRIORITY APPLN. INFO.:			JP 2002-212260	20020722
<--				
OTHER SOURCE(S):		MARPAT 140:182441		
GI				



AB The compns. comprise (a) 100 parts polymers containing $\geq 60\%$ aromatic polyesters, (b) 1-100 parts organic P compds. I [Ar¹, Ar² = (substituted) Ph, naphthyl, anthryl; R¹-R⁴ = H, C1-5 aliphatic hydrocarbon group, (substituted) Ph, naphthyl, anthryl; AL¹, AL² = C1-5 aliphatic hydrocarbon group; Ar³, Ar⁴ = (substituted) Ph, naphthyl, anthryl; p, q = 0-3], (c) 0.1-100 parts alkali metal salts and/or alkaline earth metal salts, (d) 0-50 parts fire resistance-improving polymers, (e) 0-200 parts fillers, and optionally (f) 0.01-10 parts fluoropolymers. Thus, a composition containing TRB H (polybutylene terephthalate) 100, 3,9-bis(2-phenylethyl)-2,4,8,10-tetraoxa-3,9-diphosphaspiro[5.5]undecane-3,9-dioxide 15, and CaCO₃ 5 parts was injection-molded to give a test piece showing UL-94 rating V-0 (thickness 1.6 mm).

IT 115-77-5, Pentaerythritol, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (preparation of P-containing fireproofing agents for aromatic polyester moldings with good hydrolysis resistance)

RN 115-77-5 HCAPLUS
 CN 1,3-Propanediol, 2,2-bis(hydroxymethyl)- (CA INDEX NAME)



IC ICM C08L067-02
ICS C08J005-00; C08K003-00; C08K005-5357; C08L025-00; C08L027-12;
C08L061-06; C08L063-00

CC 37-6 (Plastics Manufacture and Processing)
Section cross-reference(s): 38

ST fireproofing phenylethyl phosphaspiro undecane oxide polymer compn;
polyester alkali metal salt **fluoropolymer**
fireproofing molding; alk earth metal salt **polyester**
fireproofing molding; **polybutylene** terephthalate polymer
calcium carbonate molding

IT **Polyesters**, uses
RL: POF (Polymer in formulation); TEM (Technical or engineered
material use); USES (Uses)
(TR 8580H, TR 8550T; halogen-free fire-resistant aromatic
polyester compns. containing specific P compds. for moldings
with good hydrolysis resistance)

IT Epoxy resins, uses
Phenolic resins, uses
RL: MOA (Modifier or additive use); TEM (Technical or engineered
material use); USES (Uses)
(fire resistance improvers; halogen-free fire-resistant aromatic
polyester compns. containing specific P compds. for moldings
with good hydrolysis resistance)

IT **Fluoropolymers**, uses
RL: MOA (Modifier or additive use); TEM (Technical or engineered
material use); USES (Uses)
(fireproofing agent; halogen-free fire-resistant aromatic
polyester compns. containing specific P compds. for moldings
with good hydrolysis resistance)

IT **Fluoropolymers**, uses
RL: MOA (Modifier or additive use); TEM (Technical or engineered
material use); USES (Uses)
(fireproofing agents; halogen-free fire-resistant aromatic
polyester compns. containing specific P compds. for moldings
with good hydrolysis resistance)

IT Fire-resistant materials
Fireproofing agents
(halogen-free fire-resistant aromatic **polyester** compns.
containing specific P compds. for moldings with good hydrolysis
resistance)

IT Alkali metal salts
Alkaline earth salts
RL: MOA (Modifier or additive use); TEM (Technical or engineered
material use); USES (Uses)
(halogen-free fire-resistant aromatic **polyester** compns.
containing specific P compds. for moldings with good hydrolysis
resistance)

IT Polyamides, uses
RL: POF (Polymer in formulation); TEM (Technical or engineered
material use); USES (Uses)
(halogen-free fire-resistant aromatic **polyester** compns.
containing specific P compds. for moldings with good hydrolysis
resistance)

IT Polycarbonates, uses
RL: POF (Polymer in formulation); TEM (Technical or engineered
material use); USES (Uses)
(halogen-free fire-resistant aromatic **polyester** compns.
containing specific P compds. for moldings with good hydrolysis
resistance)

- IT **Polyesters, uses**
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(halogen-free fire-resistant aromatic **polyester** compns. containing specific P compds. for moldings with good hydrolysis resistance)
- IT **Polyolefins**
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(halogen-free fire-resistant aromatic **polyester** compns. containing specific P compds. for moldings with good hydrolysis resistance)
- IT **Polyoxyphenylenes**
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(halogen-free fire-resistant aromatic **polyester** compns. containing specific P compds. for moldings with good hydrolysis resistance)
- IT **Polythiophenylenes**
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(halogen-free fire-resistant aromatic **polyester** compns. containing specific P compds. for moldings with good hydrolysis resistance)
- IT **Molded plastics, uses**
Polymer blends
RL: TEM (Technical or engineered material use); USES (Uses)
(halogen-free fire-resistant aromatic **polyester** compns. containing specific P compds. for moldings with good hydrolysis resistance)
- IT **Polyimides, uses**
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(polyether-; halogen-free fire-resistant aromatic **polyester** compns. containing specific P compds. for moldings with good hydrolysis resistance)
- IT **Polyethers, uses**
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(polyimide-; halogen-free fire-resistant aromatic **polyester** compns. containing specific P compds. for moldings with good hydrolysis resistance)
- IT 9003-54-7, Acrylonitrile-styrene copolymer
RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
(PTFE coated with, fireproofing agent; halogen-free fire-resistant aromatic **polyester** compns. containing specific P compds. for moldings with good hydrolysis resistance)
- IT 25038-59-9, **Poly(ethylene terephthalate)**, uses
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(TR 8580H, TR 8550T; halogen-free fire-resistant aromatic **polyester** compns. containing specific P compds. for moldings with good hydrolysis resistance)
- IT 24968-12-5, **Poly(butylene terephthalate)**
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(TRB H, TRB J; halogen-free fire-resistant aromatic **polyester** compns. containing specific P compds. for moldings with good hydrolysis resistance)

- IT 26062-94-2, **Poly(butylene terephthalate)**
 RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
 (assumed monomers, TRB H, TRB J; halogen-free fire-resistant aromatic **polyester** compns. containing specific P compds. for moldings with good hydrolysis resistance)
- IT 25037-45-0, Bisphenol A-carbonic acid copolymer 25037-99-4, 1,4-Cyclohexanedimethanol-terephthalic acid polymer 25134-01-4, 2,6-Xylenol homopolymer 25230-87-9, Ethylene glycol-2,6-naphthalenedicarboxylic acid copolymer 26590-75-0, Poly(trimethylene terephthalate) 28601-83-4, 2,6-Naphthalenedicarboxylic acid-1,3-propanediol polymer 28605-06-3, 1,4-Butanediol-2,6-naphthalenedicarboxylic acid copolymer
 RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
 (assumed monomers; halogen-free fire-resistant aromatic **polyester** compns. containing specific P compds. for moldings with good hydrolysis resistance)
- IT 25068-38-6, Epikote 828 99752-88-2, PR 53195
 RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
 (fire resistance improver; halogen-free fire-resistant aromatic **polyester** compns. containing specific P compds. for moldings with good hydrolysis resistance)
- IT 9002-84-0, Polyflon MPA FA 500 347145-17-9, Blendex 449
 RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
 (fireproofing agent; halogen-free fire-resistant aromatic **polyester** compns. containing specific P compds. for moldings with good hydrolysis resistance)
- IT 62284-92-8P, 3,9-Bis(2-phenylethyl)-2,4,8,10-tetraoxa-3,9-diphosphaspiro[5.5]undecane-3,9-dioxide
 RL: IMF (Industrial manufacture); MOA (Modifier or additive use); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (fireproofing agent; preparation of P-containing fireproofing agents for aromatic **polyester** moldings with good hydrolysis resistance)
- IT 471-34-1, Calcium carbonate, uses 513-77-9, Barium carbonate 546-93-0, Magnesium carbonate 7758-87-4, Calcium phosphate
 RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
 (halogen-free fire-resistant aromatic **polyester** compns. containing specific P compds. for moldings with good hydrolysis resistance)
- IT 24936-68-3, Panlite L 1225WP, uses 24936-69-4, Poly(1,4-cyclohexanedimethanol terephthalate) 24938-67-8, Xyron P 402 24968-11-4, **Poly(ethylene naphthalate)**
 25038-54-4, NF 8020, uses 26546-03-2, Poly(trimethylene terephthalate) 28779-81-9, 2,6-Naphthalenedicarboxylic acid-1,3-propanediol copolymer, sru 28779-82-0, **Poly(butylene naphthalate)** 106677-58-1, Santac UT 61
 RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
 (halogen-free fire-resistant aromatic **polyester** compns. containing specific P compds. for moldings with good hydrolysis resistance)
- IT 27198-72-7P
 RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(preparation of P-containing fireproofing agents for aromatic polyester moldings with good hydrolysis resistance)

IT 103-63-9, (2-Bromoethyl)benzene 115-77-5, Pentaerythritol, reactions 7719-12-2, Phosphorus trichloride 475101-75-8, 3,9-Di(2-phenylethoxy)-2,4,8,10-tetraoxa-3,9-diphosphaspiro[5.5]undecane

RL: RCT (Reactant); RACT (Reactant or reagent)

(preparation of P-containing fireproofing agents for aromatic polyester moldings with good hydrolysis resistance)

L45 ANSWER 6 OF 14 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:139265 HCAPLUS

DOCUMENT NUMBER: 140:182440

TITLE: Halogen-free fire-resistant polymer compositions and their moldings with good hydrolysis resistance

INVENTOR(S): Yamanaka, Katsuhiko; Taketani, Yutaka

PATENT ASSIGNEE(S): Teijin Chemicals Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 36 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2004051818	A	20040219	JP 2002-212259	20020722

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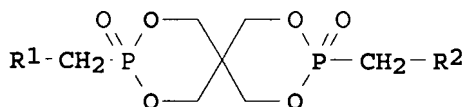
PRIORITY APPLN. INFO.: JP 2002-212259

20020722

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OTHER SOURCE(S): MARPAT 140:182440

GI



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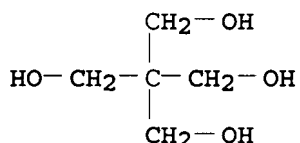
AB The compns. comprise (a) 100 parts polymers containing $\geq 60\%$ aromatic polyesters, (b) 1-100 parts organic P compds. I [R1, R2 = (substituted) Ph, naphthyl, anthryl], (c) 0.1-100 parts alkali metal salts and/or alkaline earth metal salts, (d) 0-50 parts fire resistance-improving polymers, (e) 0-200 parts fillers, and optionally (f) 0.01-10 parts fluoropolymers. Thus, a composition containing TRB H (polybutylene terephthalate) 100, 3,9-dibenzyl-2,4,8,10-tetraoxa-3,9-diphosphaspiro[5.5]undecane-3,9-dioxide 15, and CaCO₃ 5 parts was injection-molded to give a test piece showing UL-94 rating V-0 (thickness 1.6 mm).

IT 115-77-5, Pentaerythritol, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)

(preparation of P-containing fireproofing agents for aromatic

polyester moldings with good hydrolysis resistance)
 RN 115-77-5 HCAPLUS
 CN 1,3-Propanediol, 2,2-bis(hydroxymethyl)- (CA INDEX NAME)



IC ICM C08L067-02
 ICS C08J005-00; C08K003-00; C08K005-5357; C08L025-00; C08L027-12;
 C08L061-06; C08L063-00
 CC 37-6 (Plastics Manufacture and Processing)
 Section cross-reference(s): 38
 ST fireproofing benzyl phosphaspiro undecane oxide polymer compn;
polyester alkali metal salt **fluoropolymer**
 fireproofing molding; alk earth metal salt **polyester**
 fireproofing molding; **polybutylene** terephthalate polymer
 calcium carbonate molding
 IT **Polyesters**, uses
 RL: POF (Polymer in formulation); TEM (Technical or engineered
 material use); USES (Uses)
 (TR 8580H, TR 8550T; halogen-free fire-resistant aromatic
polyester compns. containing specific P compds. for moldings
 with good hydrolysis resistance)
 IT Epoxy resins, uses
 Phenolic resins, uses
 RL: MOA (Modifier or additive use); TEM (Technical or engineered
 material use); USES (Uses)
 (fire resistance improvers; halogen-free fire-resistant aromatic
polyester compns. containing specific P compds. for moldings
 with good hydrolysis resistance)
 IT **Fluoropolymers**, uses
 RL: MOA (Modifier or additive use); TEM (Technical or engineered
 material use); USES (Uses)
 (fireproofing agent; halogen-free fire-resistant aromatic
polyester compns. containing specific P compds. for moldings
 with good hydrolysis resistance)
 IT **Fluoropolymers**, uses
 RL: MOA (Modifier or additive use); TEM (Technical or engineered
 material use); USES (Uses)
 (fireproofing agents; halogen-free fire-resistant aromatic
polyester compns. containing specific P compds. for moldings
 with good hydrolysis resistance)
 IT Fire-resistant materials
 Fireproofing agents
 (halogen-free fire-resistant aromatic **polyester** compns.
 containing specific P compds. for moldings with good hydrolysis
 resistance)
 IT Alkali metal salts
 Alkaline earth salts
 RL: MOA (Modifier or additive use); TEM (Technical or engineered
 material use); USES (Uses)
 (halogen-free fire-resistant aromatic **polyester** compns.
 containing specific P compds. for moldings with good hydrolysis
 resistance)
 IT Polyamides, uses

- RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(halogen-free fire-resistant aromatic **polyester** compns. containing specific P compds. for moldings with good hydrolysis resistance)
- IT Polycarbonates, uses
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(halogen-free fire-resistant aromatic **polyester** compns. containing specific P compds. for moldings with good hydrolysis resistance)
- IT **Polyesters**, uses
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(halogen-free fire-resistant aromatic **polyester** compns. containing specific P compds. for moldings with good hydrolysis resistance)
- IT **Polyolefins**
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(halogen-free fire-resistant aromatic **polyester** compns. containing specific P compds. for moldings with good hydrolysis resistance)
- IT Polyoxyphenylenes
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(halogen-free fire-resistant aromatic **polyester** compns. containing specific P compds. for moldings with good hydrolysis resistance)
- IT Polythiophenylenes
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(halogen-free fire-resistant aromatic **polyester** compns. containing specific P compds. for moldings with good hydrolysis resistance)
- IT Molded plastics, uses
Polymer blends
RL: TEM (Technical or engineered material use); USES (Uses)
(halogen-free fire-resistant aromatic **polyester** compns. containing specific P compds. for moldings with good hydrolysis resistance)
- IT Polyimides, uses
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(polyether-; halogen-free fire-resistant aromatic **polyester** compns. containing specific P compds. for moldings with good hydrolysis resistance)
- IT Polyethers, uses
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(polyimide-; halogen-free fire-resistant aromatic **polyester** compns. containing specific P compds. for moldings with good hydrolysis resistance)
- IT 9003-54-7, Acrylonitrile-styrene copolymer
RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
(PTFE coated with, fireproofing agent; halogen-free fire-resistant aromatic **polyester** compns. containing specific P compds. for moldings with good hydrolysis resistance)
- IT 25038-59-9, **Poly(ethylene terephthalate)**, uses

- RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
 (TR 8580H, TR 8550T; halogen-free fire-resistant aromatic **polyester** compns. containing specific P compds. for moldings with good hydrolysis resistance)
- IT 24968-12-5, **Poly(butylene terephthalate)**
 RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
 (TRB H, TRB J; halogen-free fire-resistant aromatic **polyester** compns. containing specific P compds. for moldings with good hydrolysis resistance)
- IT 26062-94-2, **Poly(butylene terephthalate)**
 RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
 (assumed monomers, TRB H, TRB J; halogen-free fire-resistant aromatic **polyester** compns. containing specific P compds. for moldings with good hydrolysis resistance)
- IT 25037-45-0 25037-99-4, 1,4-Cyclohexanedimethanol-terephthalic acid polymer 25134-01-4 25230-87-9 26590-75-0, Poly(trimethylene terephthalate) 28601-83-4 28605-06-3
 RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
 (assumed monomers; halogen-free fire-resistant aromatic **polyester** compns. containing specific P compds. for moldings with good hydrolysis resistance)
- IT 25068-38-6, Epikote 828 99752-88-2, PR 53195
 RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
 (fire resistance improver; halogen-free fire-resistant aromatic **polyester** compns. containing specific P compds. for moldings with good hydrolysis resistance)
- IT 9002-84-0, Polyflon MPA FA 500 347145-17-9, Blendex 449
 RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
 (fireproofing agent; halogen-free fire-resistant aromatic **polyester** compns. containing specific P compds. for moldings with good hydrolysis resistance)
- IT 20544-37-0P, 3,9-Dibenzyl-2,4,8,10-tetraoxa-3,9-diphosphaspiro[5.5]undecane 3,9-dioxide
 RL: IMF (Industrial manufacture); MOA (Modifier or additive use); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (fireproofing agent; preparation of P-containing fireproofing agents for aromatic **polyester** moldings with good hydrolysis resistance)
- IT 471-34-1, Calcium carbonate, uses 513-77-9, Barium carbonate 546-93-0, Magnesium carbonate 7758-87-4, Calcium phosphate
 RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
 (halogen-free fire-resistant aromatic **polyester** compns. containing specific P compds. for moldings with good hydrolysis resistance)
- IT 24936-68-3, Panlite L 1225WP, uses 24936-69-4, Poly(1,4-cyclohexanedimethanol terephthalate) 24938-67-8, Xyron P 402 24968-11-4, **Poly(ethylene naphthalate)**
 25038-54-4, NF 8020, uses 26546-03-2, Poly(trimethylene terephthalate) 28779-81-9, 2,6-Naphthalenedicarboxylic acid-1,3-propanediol copolymer, sru 28779-82-0, **Poly(butylene naphthalate)** 106677-58-1, Santac UT 61
 RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)

material use); USES (Uses)
 (halogen-free fire-resistant aromatic **polyester** compns.
 containing specific P compds. for moldings with good hydrolysis
 resistance)

IT 27198-72-7P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP
 (Preparation); RACT (Reactant or reagent)

(preparation of P-containing fireproofing agents for aromatic
polyester moldings with good hydrolysis resistance)

IT 100-39-0, Benzyl bromide 115-77-5, Pentaerythritol,
 reactions 7093-28-9, 3,9-Dibenzylloxy-2,4,8,10-tetraoxa-3,9-
 diphosphaspiro[5,5]undecane 7719-12-2, Phosphorus trichloride

RL: RCT (Reactant); RACT (Reactant or reagent)

(preparation of P-containing fireproofing agents for aromatic
polyester moldings with good hydrolysis resistance)

L45 ANSWER 7 OF 14 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:57585 HCAPLUS

DOCUMENT NUMBER: 140:112503

TITLE: Halogen-free heat- and fire-resistant
 transparent ABS resin-based compositions
 containing organophosphorus compounds, and their
 moldings

INVENTOR(S): Yamanaka, Katsuhiko; Taketani, Yutaka

PATENT ASSIGNEE(S): Teijin Chemicals Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 34 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004018733	A	20040122	JP 2002-177296	200206 18

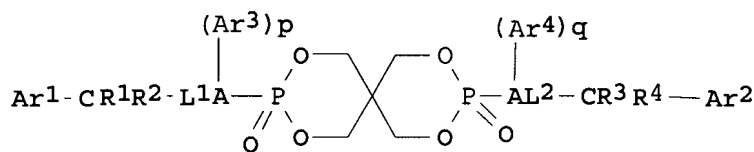
PRIORITY APPLN. INFO.:

JP 2002-177296

200206
18

OTHER SOURCE(S): MARPAT 140:112503

GI

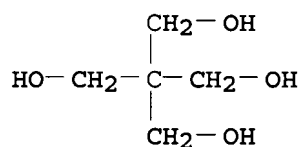


I

AB Title compns. contain 100 parts polymers containing $\geq 60\%$ ABS and
 1-100 parts organophosphorus compds. I [Ar¹-Ar⁴ = (un)substituted
 Ph, naphthyl, anthryl; R¹-R⁴ = H, C1-5 aliphatic hydrocarbyl,
 (un)substituted Ph, naphthyl, anthryl; AL¹, AL² = C1-5 linear or
 branched aliphatic hydrocarbyl; p, q = 0-3]. Thus, a molding

comprising 100 parts Santac UT 61 (ABS resin) and 15 parts 2,4,8,10-tetraoxa-3,9-diphosphaspiro[5,5]undecane-3,9-di(2-phenylethyl)-3,9-dioxide showed UL-94 flammability rating V-2, heat distortion temperature retention 96%, and no burn marks.

- IT 115-77-5, Pentaerythritol, reactions
 RL: **RCT (Reactant); RACT (Reactant or reagent)**
 (in manufacture of fireproofing agent; heat- and fire-resistant transparent ABS resin-based compns. containing tetraoxadiphosphaspiroundecanes)
 RN 115-77-5. HCAPLUS
 CN 1,3-Propanediol, 2,2-bis(hydroxymethyl)- (CA INDEX NAME)



- IC ICM C08L055-02
 ICS C08J005-00; C08K005-5357; C09K021-12; C08L101-00
 CC 38-3 (Plastics Fabrication and Uses)
 Section cross-reference(s): 29, 37
 IT **Polyesters**, uses
 RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
 (aromatic; heat- and fire-resistant transparent ABS resin-based compns. containing tetraoxadiphosphaspiroundecanes)
 IT **Fluoropolymers**, uses
 RL: MOA (Modifier or additive use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
 (heat- and fire-resistant transparent ABS resin-based compns. containing tetraoxadiphosphaspiroundecanes)
 IT **Polyesters**, uses
 RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
 (heat- and fire-resistant transparent ABS resin-based compns. containing tetraoxadiphosphaspiroundecanes)
 IT **Polyolefins**
 RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
 (heat- and fire-resistant transparent ABS resin-based compns. containing tetraoxadiphosphaspiroundecanes)
 IT 103-63-9, 2-Bromoethylbenzene 115-77-5, Pentaerythritol, reactions 475101-75-8, 3,9-Di(2-phenylethoxy)-2,4,8,10-tetraoxa-3,9-diphosphaspiro[5,5]undecane
 RL: **RCT (Reactant); RACT (Reactant or reagent)**
 (in manufacture of fireproofing agent; heat- and fire-resistant transparent ABS resin-based compns. containing tetraoxadiphosphaspiroundecanes)

L45 ANSWER 8 OF 14 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:55648 HCAPLUS

DOCUMENT NUMBER: 140:112485

TITLE: Halogen-free heat- and fire-resistant transparent ABS resin-based compositions containing organophosphorus compounds, and their moldings

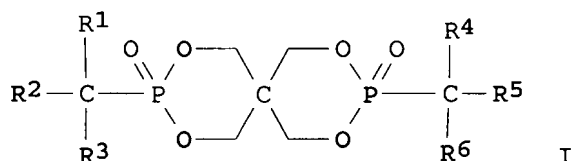
INVENTOR(S): Yamanaka, Katsuhiko; Taketani, Yutaka

PATENT ASSIGNEE(S): Teijin Chemicals Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 33 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004018734	A	20040122	JP 2002-177297	20020618

PRIORITY APPLN. INFO.: JP 2002-177297
 20020618

OTHER SOURCE(S): MARPAT 140:112485
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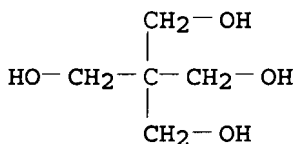


AB Title compns. contain 100 parts polymers containing $\geq 60\%$ ABS and 1-100 parts organophosphorus compds. I [R1, R4 = H, C1-5 aliphatic hydrocarbyl, (un)substituted Ph, naphthyl, anthryl; R2, R3, R5, R6 = (un)substituted Ph, naphthyl, anthryl]. Thus, a molding comprising 100 parts Santac UT 61 (ABS resin) and 15 parts 2,4,8,10-tetraoxa-3,9-diphosphaspiro[5,5]undecane-3,9-bis(diphenylmethyl)-3,9-dioxide showed UL-94 flammability rating V-2, heat distortion temperature retention 98%, and no burn marks.

IT 115-77-5, Pentaerythritol, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (in manufacture of fireproofing agent; heat- and fire-resistant transparent ABS resin-based compns. containing tetraoxadiphosphaspiroundecanes)

RN 115-77-5 HCAPLUS

CN 1,3-Propanediol, 2,2-bis(hydroxymethyl)- (CA INDEX NAME)



IC ICM C08L055-02
 ICS C08J005-00; C08K005-5357; C09K021-12; C08L101-00
 CC 38-3 (Plastics Fabrication and Uses)
 Section cross-reference(s): 29, 37

IT **Polyesters, uses**
RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(aromatic; heat- and fire-resistant transparent ABS resin-based compns. containing tetraoxadiphosphaspiroundecanes)

IT **Fluoropolymers, uses**
RL: MOA (Modifier or additive use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(heat- and fire-resistant transparent ABS resin-based compns. containing tetraoxadiphosphaspiroundecanes)

IT **Polyesters, uses**
RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(heat- and fire-resistant transparent ABS resin-based compns. containing tetraoxadiphosphaspiroundecanes)

IT **Polyolefins**
RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(heat- and fire-resistant transparent ABS resin-based compns. containing tetraoxadiphosphaspiroundecanes)

IT **115-77-5, Pentaerythritol, reactions 776-74-9, Diphenylmethyl bromide 54767-39-4, (Diphenylmethyl)phosphonic dichloride 475101-77-0, 3,9-Bis(diphenylmethoxy)-2,4,8,10-tetraoxa-3,9-diphosphaspiro[5,5]undecane**
RL: **RCT (Reactant); RACT (Reactant or reagent)**
(in manufacture of fireproofing agent; heat- and fire-resistant transparent ABS resin-based compns. containing tetraoxadiphosphaspiroundecanes)

L45 ANSWER 9 OF 14 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:52945 HCAPLUS

DOCUMENT NUMBER: 140:112462

TITLE: halogen-free heat- and fire-resistant transparent ABS resin-based compositions containing organophosphorus compounds and their moldings

INVENTOR(S): Yamanaka, Katsuhiko; Taketani, Yutaka

PATENT ASSIGNEE(S): Teijin Chemicals Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 33 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

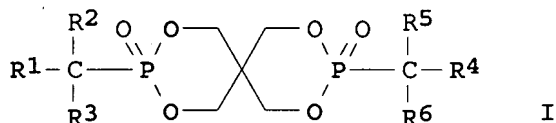
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2004018732	A	20040122	JP 2002-177295	20020618

PRIORITY APPLN. INFO.: <-- JP 2002-177295

20020618

OTHER SOURCE(S): MARPAT 140:112462

GI



AB Title compns. contain 100 parts polymers containing $\geq 60\%$ ABS and 1-100 parts organophosphorus compds. I [R1, R4 = H, C1-5 aliphatic hydrocarbyl; R3, R6 = C1-5 aliphatic hydrocarbyl; R2, R5 = (un)substituted Ph, naphthyl, anthryl]. Thus, a molding comprising 100 parts Santac UT 61 (ABS resin) and 15 parts 2,4,8,10-tetraoxa-3,9-diphosphaspiro[5,5]undecane-3,9-di- α -methylbenzyl-3,9-dioxide showed UL-94 flammability rating V-2, heat distortion temperature retention 95%, and no burn marks.

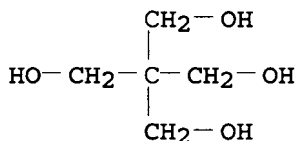
IT 115-77-5, Pentaerythritol, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)

(in manufacture of fireproofing agent; heat- and fire-resistant transparent ABS resin-based compns. containing tetraoxadiphosphaspiroundecanes)

RN 115-77-5 HCAPLUS

CN 1,3-Propanediol, 2,2-bis(hydroxymethyl)- (CA INDEX NAME)



IC ICM C08L055-02

ICS C08J005-00; C08K005-5357; C09K021-12; C08L101-00

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 29, 37

IT **Polyesters**, uses

RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(aromatic; heat- and fire-resistant transparent ABS resin-based compns. containing tetraoxadiphosphaspiroundecanes)

IT **Fluoropolymers**, uses

RL: MOA (Modifier or additive use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(heat- and fire-resistant transparent ABS resin-based compns. containing tetraoxadiphosphaspiroundecanes)

IT **Polyesters**, uses

RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(heat- and fire-resistant transparent ABS resin-based compns. containing tetraoxadiphosphaspiroundecanes)

IT **Polyolefins**

RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(heat- and fire-resistant transparent ABS resin-based compns. containing tetraoxadiphosphaspiroundecanes)

IT 115-77-5, Pentaerythritol, reactions 585-71-7, 1-Phenylethyl bromide

RL: RCT (Reactant); RACT (Reactant or reagent)

(in manufacture of fireproofing agent; heat- and fire-resistant

transparent ABS resin-based compns. containing
tetraoxadiphosphaspiroundecanes)

L45 ANSWER 10 OF 14 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:52944 HCAPLUS

DOCUMENT NUMBER: 140:112461

TITLE: Halogen-free heat- and fire-resistant
transparent ABS resin-based compositions
containing organophosphorus compounds and their
moldings

INVENTOR(S): Yamanaka, Katsuhiro; Taketani, Yutaka

PATENT ASSIGNEE(S): Teijin Chemicals Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 33 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

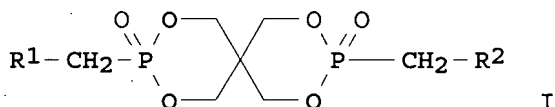
LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2004018731	A	20040122	JP 2002-177294	200206 18
			<--	
PRIORITY APPLN. INFO.:			JP 2002-177294	200206 18
			<--	

OTHER SOURCE(S): MARPAT 140:112461
GI



AB Title compns. contain 100 parts polymers containing ≥60% ABS and
1-100 parts organophosphorus compds. I [R1, R2 = (un)substituted Ph,
naphthyl, anthryl] with acid value ≤0.7 mg KOH/g. Thus, a
molding comprising 100 parts Santac UT 61 (ABS resin) and 15 parts
2,4,8,10-tetraoxa-3,9-diphosphaspiro[5,5]undecane-3,9-dibenzyl-3,9-
dioxide showed UL-94 flammability rating V-2, heat distortion temperature
retention 98%, and no burn marks.

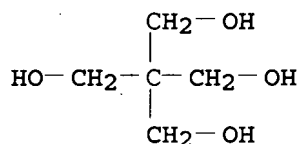
IT 115-77-5, Pentaerythritol, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)

(in manufacture of fireproofing agent; heat- and fire-resistant
transparent ABS resin-based compns. containing
tetraoxadiphosphaspiroundecanes)

RN 115-77-5 HCAPLUS

CN 1,3-Propanediol, 2,2-bis(hydroxymethyl)- (CA INDEX NAME)



- IC ICM C08L055-02
ICS C08J005-00; C08K005-5357; C09K021-12; C08L101-00
- CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 29, 37
- IT **Polyesters**, uses
RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(aromatic; heat- and fire-resistant transparent ABS resin-based compns. containing tetraoxadiphosphaspiroundecanes)
- IT **Fluoropolymers**, uses
RL: MOA (Modifier or additive use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(heat- and fire-resistant transparent ABS resin-based compns. containing tetraoxadiphosphaspiroundecanes)
- IT **Polyesters**, uses
RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(heat- and fire-resistant transparent ABS resin-based compns. containing tetraoxadiphosphaspiroundecanes)
- IT **Polyolefins**
RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(heat- and fire-resistant transparent ABS resin-based compns. containing tetraoxadiphosphaspiroundecanes)
- IT 100-39-0, Benzyl bromide 115-77-5, Pentaerythritol, reactions 7093-28-9, 3,9-Dibenzylloxy-2,4,8,10-tetraoxa-3,9-diphosphaspiro[5,5]undecane
RL: **RCT (Reactant)**; **RACT (Reactant or reagent)**
(in manufacture of fireproofing agent; heat- and fire-resistant transparent ABS resin-based compns. containing tetraoxadiphosphaspiroundecanes)

L45 ANSWER 11 OF 14 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:52866 HCAPLUS

DOCUMENT NUMBER: 140:112203

TITLE: Aromatic **polyester** composition
containing organic phosphate fireproofing agent
and molding of the composition

INVENTOR(S): Yamanaka, Katsuhiko; Taketani, Yutaka

PATENT ASSIGNEE(S): Teijin Chemicals Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 42 pp.
CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2004018585	A	20040122	JP 2002-172650	200206

13

PRIORITY APPLN. INFO.:

JP 2002-172650

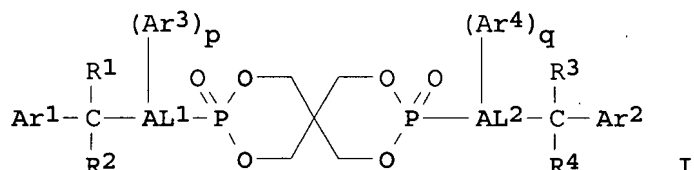
200206

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OTHER SOURCE(S):

MARPAT 140:112203

GI



AB The composition contains 100 parts of a resin containing $\geq 60\%$ of an aromatic **polyester**, 1-100 parts of the organic phosphate I (Ar1, Ar2 = Ph, naphthyl, anthryl; R1-R4 = H, C1-5 aliphatic hydrocarbyl, Ph, naphthyl, anthryl; AL1, AL2 = C1-5 branched or linear aliphatic hydrocarbyl; Ar3, Ar4 = Ph, naphthyl, anthryl; p, q = 0-3; each of Ar3 and Ar4 may be linked with AL1 and AL2; Ph, naphthyl, and anthryl may be substituted with aromatic ring) as the claimed fireproofing agent, 0-50 parts of a resin for improvement of fire resistance, and 0-200 parts of a filler. The composition is molded to give the halogen-free fire-resistant molding. Thus, 100 parts **poly(butylene terephthalate)** (TRB-H) and 15 parts 2,4,8,10-tetraoxa-3,9-diphosphaspiro[5,5]undecane 3,9-di(2-phenylethyl)-3,9-dioxide were blended, mixed with chopped glass fiber, and injection-molded to give test pieces UL-94 flame retardance V-0 and limiting oxygen index (LOI) 27.5.

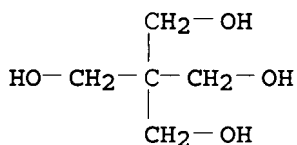
IT 115-77-5, Pentaerythritol, reactions

RL: **RCT (Reactant); RACT (Reactant or reagent)**

(aromatic **polyester** composition containing organic phosphate fireproofing agent from)

RN 115-77-5 HCAPLUS

CN 1,3-Propanediol, 2,2-bis(hydroxymethyl)- (CA INDEX NAME)



IC ICM C08L067-00

ICS C08J005-00; C08K005-5357

CC 37-6 (Plastics Manufacture and Processing)

ST org phosphate fireproofing agent **polyester**; halogen free arom **polyester** molding; **polybutylene terephthalate** org phosphate fireproofing agent

IT Glass fibers, uses

RL: MOA (Modifier or additive use); USES (Uses)

(ECS03T-187H; in aromatic **polyester** composition containing organic phosphate fireproofing agent for halogen-free molding)

IT **Fluoropolymers**, uses

RL: MOA (Modifier or additive use); USES (Uses)
(Polyflon MPA-FA 500; in aromatic **polyester** composition containing organic phosphate fireproofing agent for halogen-free molding)

IT **Polyesters**, uses
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(TR 8580H; aromatic **polyester** composition containing organic phosphate fireproofing agent for halogen-free molding)

IT Fire-resistant materials
Fireproofing agents
Transparent materials
(aromatic **polyester** composition containing organic phosphate fireproofing agent for halogen-free molding)

IT Polyamides, uses
Polyolefins
Polyoxyphenylenes
Polythiophenylenes
RL: MOA (Modifier or additive use); USES (Uses)
(aromatic **polyester** composition containing organic phosphate fireproofing agent for halogen-free molding)

IT **Polyesters**, uses
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(aromatic **polyester** composition containing organic phosphate fireproofing agent for halogen-free molding)

IT Polymer blends
RL: TEM (Technical or engineered material use); USES (Uses)
(aromatic **polyester** composition containing organic phosphate fireproofing agent for halogen-free molding)

IT Polycarbonates, uses
RL: MOA (Modifier or additive use); USES (Uses)
(aromatic; aromatic **polyester** composition containing organic phosphate fireproofing agent for halogen-free molding)

IT **Polyesters**, uses
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(aromatic; aromatic **polyester** composition containing organic phosphate fireproofing agent for halogen-free molding)

IT Epoxy resins, uses
Phenolic resins, uses
RL: MOA (Modifier or additive use); USES (Uses)
(for improving fire resistance; in aromatic **polyester** composition containing organic phosphate fireproofing agent for halogen-free molding)

IT **Fluoropolymers**, uses
RL: MOA (Modifier or additive use); USES (Uses)
(in aromatic **polyester** composition containing organic phosphate fireproofing agent for halogen-free molding)

IT Polyimides, uses
RL: MOA (Modifier or additive use); USES (Uses)
(polyether-; aromatic **polyester** composition containing organic phosphate fireproofing agent for halogen-free molding)

IT Polyethers, uses
RL: MOA (Modifier or additive use); USES (Uses)
(polyimide-; aromatic **polyester** composition containing organic phosphate fireproofing agent for halogen-free molding)

IT 9002-84-0, PTFE
RL: MOA (Modifier or additive use); USES (Uses)
(Polyflon MPA-FA 500; in aromatic **polyester** composition containing organic phosphate fireproofing agent for halogen-free molding)

- IT 25038-59-9, TR 8550T, uses
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(TR 8580H; aromatic **polyester** composition containing organic phosphate fireproofing agent for halogen-free molding)
- IT 24968-12-5, TRB-H
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(TRB-J; aromatic **polyester** composition containing organic phosphate fireproofing agent for halogen-free molding)
- IT 62284-92-8P
RL: IMF (Industrial manufacture); MOA (Modifier or additive use); PREP (Preparation); USES (Uses)
(aromatic **polyester** composition containing organic phosphate fireproofing agent for halogen-free molding)
- IT 24936-68-3, Panlite L 1225WP, uses 24938-67-8, Xyron P 402
106677-58-1, Santac UT 61
RL: MOA (Modifier or additive use); USES (Uses)
(aromatic **polyester** composition containing organic phosphate fireproofing agent for halogen-free molding)
- IT 9020-73-9, Poly(ethylene naphthalate)
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(aromatic **polyester** composition containing organic phosphate fireproofing agent for halogen-free molding)
- IT 25038-54-4, NF 8020, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(aromatic **polyester** composition containing organic phosphate fireproofing agent for halogen-free molding)
- IT 103-63-9, 2-Phenylethyl bromide 115-77-5, Pentaerythritol, reactions 7719-12-2, Phosphorus trichloride
RL: RCT (Reactant); RACT (Reactant or reagent)
(aromatic **polyester** composition containing organic phosphate fireproofing agent from)
- IT 25037-45-0
RL: MOA (Modifier or additive use); USES (Uses)
(assumed monomers; aromatic **polyester** composition containing organic phosphate fireproofing agent for halogen-free molding)
- IT 9020-32-0 26062-94-2
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(assumed monomers; aromatic **polyester** composition containing organic phosphate fireproofing agent for halogen-free molding)
- IT 9003-53-6, Polystyrene 9003-54-7, Stylac AS 783 25068-38-6, Epikote 828 99752-88-2, PR 53195
RL: MOA (Modifier or additive use); USES (Uses)
(for improving fire resistance; in aromatic **polyester** composition containing organic phosphate fireproofing agent for halogen-free molding)
- IT 347145-17-9, Blendex 449 878558-04-4, PFE 301S
RL: MOA (Modifier or additive use); USES (Uses)
(in aromatic **polyester** composition containing organic phosphate fireproofing agent for halogen-free molding)
- IT 27198-72-7P
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(intermediate; aromatic **polyester** composition containing organic phosphate fireproofing agent from)

ACCESSION NUMBER: 2002:888823 HCAPLUS
 DOCUMENT NUMBER: 137:370855
 TITLE: Flame-retardant polyester-based resin
 compositions containing organic phosphorous
 compounds and molded articles therefrom
 INVENTOR(S): Yamanaka, Katsuhiko; Taketani, Yutaka
 PATENT ASSIGNEE(S): Teijin Chemicals, Ltd., Japan
 SOURCE: PCT Int. Appl., 95 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

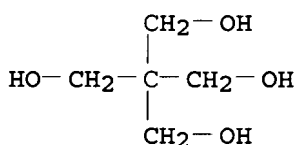
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002092690	A1	20021121	WO 2002-JP4659	20020514
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W: CN, KR, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
JP 2003034749	A	20030207	JP 2002-138136	20020514
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EP 1408085	A1	20040414	EP 2002-769597	20020514
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CN 1509314	A	20040630	CN 2002-810103	20020514
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JP 2003160722	A	20030606	JP 2002-165449	20020606
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JP 2003213109	A	20030730	JP 2002-165450	20020606
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US 2004127611	A1	20040701	US 2003-476390	20031031
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US 7087667	B2	20060808		
US 2005256293	A1	20051117	US 2005-152372	20050615
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PRIORITY APPLN. INFO.:			JP 2001-144478	A
				20010515
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			JP 2001-281268	A

200109
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JP 2001-347212 A200111
13<--
WO 2002-JP4659 W200205
14<--
US 2003-476390 A1200310
31

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OTHER SOURCE(S): MARPAT 137:370855

- AB Title compns. comprising (A) a resin component comprising ≥ 60 aromatic **polyester** resin 100, (B) a organophosphorus compound with acid value ≤ 0.7 mg-KOH/g, (C) a resin for improving flame retardancy 0-50, and (D) a filler 0-200 parts, are substantially halogen free, and meet UL94 V-2 or meet UL94 V-0 under suitable conditions. Thus, 6.81 parts pentaerythritol and 13.76 parts trichlorophosphine were reacted at 60° to give a 2,4,8,10-tetraoxa-3,9-diphosphaspiro[5.5]undecane,3,9-dihydro-3,9-dioxide, 10.94 parts benzyl bromide was added therein to give a 2,4,8,10-tetraoxa-3,9-diphosphaspiro[5.5]undecane,3,9-dibenzyl-3,9-dioxide with acid value 0.06 mg-KOH/g, 15 parts of which was mixed with 100 parts TRB-H to give a composition showing good flame retardancy.
- IT 115-77-5, Pentaerythritol, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of organic phosphorous flame retardants for halogen free flame-retardant **polyester** resin compns.)
- RN 115-77-5 HCAPLUS
- CN 1,3-Propanediol, 2,2-bis(hydroxymethyl) - (CA INDEX NAME)



- IC ICM C08L067-02
ICS C08J005-00; C08K005-53
- CC 37-6 (Plastics Manufacture and Processing)
- ST flame retardant **polyester** compn TRB phosphorous compd
molded article
- IT Polyamides, properties
RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(NF 8020, blend with **polyester** and optionally or/and **perfluoropolymer**; preparation of organic phosphorous flame retardants for halogen free flame-retardant **polyester** resin compns.)
- IT **Polyesters**, properties
RL: POF (Polymer in formulation); PRP (Properties); USES (Uses)
(aromatic, blend with thermoplastics, flame retardancy improving resins, and optionally **perfluoropolymers**; preparation of organic phosphorous flame retardants for halogen free

- flame-retardant **polyester** resin compns.)
- IT **Polyesters**, properties
 RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
 (blend with flame retardancy improving resin, and optionally **perfluoropolymers**; preparation of organic phosphorous flame retardants for halogen free flame-retardant **polyester** resin compns.)
- IT Polycarbonates, properties
 RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
 (blend with **polyester** and optionally or/and **perfluoropolymer**; preparation of organic phosphorous flame retardants for halogen free flame-retardant **polyester** resin compns.)
- IT Phenolic resins, properties
 Polyoxyphenylenes
 RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
 (blend with **polyester** and optionally **perfluoropolymers**; preparation of organic phosphorous flame retardants for halogen free flame-retardant **polyester** resin compns.)
- IT **Fluoropolymers**, properties
 RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
 (blend with **polyester** and optionally thermoplastic resins or/and flame retardancy improving resin; preparation of organic phosphorous flame retardants for halogen free flame-retardant **polyester** resin compns.)
- IT Epoxy resins, properties
 RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
 (blend with **polyester**, flame retardancy improving resin, and optionally **perfluoropolymers**; preparation of organic phosphorous flame retardants for halogen free flame-retardant **polyester** resin compns.)
- IT **Polyolefins**
 Polythiophenylenes
 RL: POF (Polymer in formulation); PRP (Properties); USES (Uses)
 (blend with **polyester**, flame retardancy improving resins, and optionally **perfluoropolymers**; preparation of organic phosphorous flame retardants for halogen free flame-retardant **polyester** resin compns.)
- IT Glass fibers, uses
 RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
 (filler; preparation of organic phosphorous flame retardants for halogen free flame-retardant **polyester** resin compns.)
- IT Phosphates, preparation
 RL: IMF (Industrial manufacture); MOA (Modifier or additive use); PREP (Preparation); USES (Uses)
 (organic, flame retardants; preparation of organic phosphorous flame retardants for halogen free flame-retardant **polyester** resin compns.)
- IT Polymer blends
 RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
 (**polyester** and thermoplastic resins, or/and flame retardancy improving resin, and **perfluoropolymers**;

- preparation of organic phosphorous flame retardants for halogen free flame-retardant **polyester** resin compns.)
- IT Polyimides, properties
RL: POF (Polymer in formulation); PRP (Properties); USES (Uses)
(polyether-, blend with **polyester**, flame retardancy improving resins, and optionally **perfluoropolymers**; preparation of organic phosphorous flame retardants for halogen free flame-retardant **polyester** resin compns.)
- IT Polyethers, properties
RL: POF (Polymer in formulation); PRP (Properties); USES (Uses)
(polyimide-, blend with **polyester**, flame retardancy improving resins, and optionally **perfluoropolymers**; preparation of organic phosphorous flame retardants for halogen free flame-retardant **polyester** resin compns.)
- IT Fillers
Fire-resistant materials
Fireproofing agents
(preparation of organic phosphorous flame retardants for halogen free flame-retardant **polyester** resin compns.)
- IT **Fluoropolymers**, properties
Polyamides, properties
Polyesters, properties
RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(preparation of organic phosphorous flame retardants for halogen free flame-retardant **polyester** resin compns.)
- IT Molded plastics, properties
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(preparation of organic phosphorous flame retardants for halogen free flame-retardant **polyester** resin compns.)
- IT 25038-54-4, Nylon 6, properties
RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(NF 8020, blend with **polyester** and optionally or/and **perfluoropolymer**; preparation of organic phosphorous flame retardants for halogen free flame-retardant **polyester** resin compns.)
- IT 25038-59-9, TR 8580H, properties
RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(blend with flame retardancy improving resin, and optionally **perfluoropolymers**; preparation of organic phosphorous flame retardants for halogen free flame-retardant **polyester** resin compns.)
- IT 9003-53-6, Styron GPPS 9003-54-7, Stylac AS 783 24936-68-3, Panlite L 1225WP, properties 24938-67-8, P 402 25037-45-0 25068-38-6 99752-88-2, PR 53195 106677-58-1, Santac UT 61
RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(blend with **polyester** and optionally or/and **perfluoropolymer**; preparation of organic phosphorous flame retardants for halogen free flame-retardant **polyester** resin compns.)
- IT 9002-84-0, Polyflon MPAFA 500 347145-17-9, Blendex 449
RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(blend with **polyester** and optionally thermoplastic resins or/and flame retardancy improving resin; preparation of organic phosphorous flame retardants for halogen free flame-retardant

- polyester resin compns.)**
- IT 9020-32-0 9020-73-9, **Poly(ethylene naphthalate)** 9052-39-5, Cyclohexanedimethanol-terephthalic acid copolymer 9053-81-0, Cyclohexanedimethanol-terephthalic acid copolymer, sru 26546-03-2 26590-75-0, **Poly(trimethylene terephthalate)** 51806-50-9, **Poly(butylene naphthalate)** 52309-38-3 262266-43-3 262371-02-8
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(blend with thermoplastic resin, flame retardancy improving resin, filler, and optionally **perfluoropolymer**; preparation of organic phosphorous flame retardants for halogen free flame-retardant **polyester resin compns.**)
- IT 20544-37-0P 62284-92-8P 475101-74-7P 475101-76-9P
RL: IMF (Industrial manufacture); MOA (Modifier or additive use); PREP (Preparation); USES (Uses)
(flame retardant; preparation of organic phosphorous flame retardants for halogen free flame-retardant **polyester resin compns.**)
- IT 1889-67-4, Nofmer BC 35948-25-5, HCA
RL: MOA (Modifier or additive use); USES (Uses)
(flame retardant; preparation of organic phosphorous flame retardants for halogen free flame-retardant **polyester resin compns.**)
- IT 27198-72-7P
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(intermediate; preparation of organic phosphorous flame retardants for halogen free flame-retardant **polyester resin compns.**)
- IT 24968-12-5, TRB-H 26062-94-2, Butanediol-terephthalic acid copolymer
RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(optionally blend with thermoplastic resin, flame retardancy improving resin, or/and **perfluoropolymers**; preparation of organic phosphorous flame retardants for halogen free flame-retardant **polyester resin compns.**)
- IT 878558-04-4, PFE 301S
RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(preparation of organic phosphorous flame retardants for halogen free flame-retardant **polyester resin compns.**)
- IT 100-39-0, Benzyl bromide 100-51-6, Benzylalcohol, reactions 103-63-9, 2-Bromoethylbenzene 115-77-5, Pentaerythritol, reactions 585-71-7, 1-Bromoethylbenzene 776-74-9, Diphenylmethyl bromide 7093-28-9, 3,9-Dibenzylloxy-2,4,8,10-tetraoxa-3,9-diphosphaspiro[5.5]undecane 7719-12-2, Trichlorophosphine 54767-39-4 475101-75-8, 3,9-Di(2-phenylethoxy)-2,4,8,10-tetraoxa-3,9-diphosphaspiro[5.5]undecane 475101-77-0, 3,9-Bis(diphenylmethoxy)-2,4,8,10-tetraoxa-3,9-diphosphaspiro[5.5]undecane
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of organic phosphorous flame retardants for halogen free flame-retardant **polyester resin compns.**)
- REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L45 ANSWER 13 OF 14 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2002:367188 HCAPLUS
DOCUMENT NUMBER: 136:371121
TITLE: Cured coatings having improved scratch

resistance, coated substrates, and coating/curing process

INVENTOR(S): Anderson, Lawrence G.; Barkac, Karen A.; Chasser, Anthony M.; Desaw, Shawn A.; Hartman, Marvis E.; Hayes, Deborah E.; Hockswender, Thomas R.; Kuster, Kymarie L.; Montague, Robert A.; Nakajima, Masayuki; Olson, Kurt G.; Richardson, Jamel S.; Sadvary, Richard J.; Simpson, Dennis A.; Tyebjee, Shiryn; Wilt, Truman F.

PATENT ASSIGNEE(S): PPG Industries Ohio, Inc., USA

SOURCE: U.S., 67 pp., Cont.-in-part of U.S. Ser. No. 489,043, abandoned.
CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 9

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6387519	B1	20020514	US 2000-629423	20000731
ES 2249285	T3	20060401	ES 2000-950897	20000731
US 2002086168	A1	20020704	US 2001-919198	20010731
US 6623791	B2	20030923		
JP 2006057098	A	20060302	JP 2005-241909	20050823
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JP 2006213925	A	20060817	JP 2006-66801	20060310
PRIORITY APPLN. INFO.:			US 1999-365069	B2 19990730
			US 1999-171899P	P 19991223
			US 2000-489043	B2 20000121
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23

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US 2000-489042

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US 2000-489132

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US 2000-629423

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US 2000-629443

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200007
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AB Cured coatings have particles at a surface region of the cured coating. Multi-component composite coatings include a cured basecoat deposited from a pigmented coating composition and a cured topcoat. The multi-component composite coatings provide highly scratch resistant color-plus-clear coatings capable of retaining scratch resistance after weathering. The coatings are cured by ionizing radiation, actinic radiation, or ionizing or actinic radiation and thermal methods.

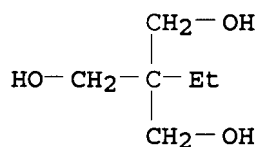
IT 77-99-6, Trimethylolpropane

RL: RCT (Reactant); RACT (Reactant or reagent)

(binder precursor; cured coatings having inorg. filler particles in greater concns. near surfaces for improved scratch resistance)

RN 77-99-6 HCAPLUS

CN 1,3-Propanediol, 2-ethyl-2-(hydroxymethyl)- (CA INDEX NAME)



IC ICM B32B005-16

ICS B32B009-04; C08K003-34; C08K003-36; C08K083-04

INCL 428447000

CC 42-5 (Coatings, Inks, and Related Products)

IT Polyesters, uses

RL: PRP (Properties); TEM (Technical or engineered material use);

USES (Uses)

(acrylic, coating binder; cured coatings having inorg. filler particles in greater concns. near surfaces for improved scratch resistance)

IT Polyolefin rubber

RL: MSC (Miscellaneous)

(substrates; cured coatings having inorg. filler particles in greater concns. near surfaces for improved scratch resistance)

IT Fluoropolymers, uses

Polysiloxanes, uses

RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)

(surfactants; cured coatings having inorg. filler particles in greater concns. near surfaces for improved scratch resistance)

IT 75-56-9, Propylene oxide, reactions 77-99-6,

Trimethylolpropane 999-97-3, Hexamethyldisilazane 25550-51-0, Methylhexahydrophthalic anhydride

RL: RCT (Reactant); RACT (Reactant or reagent)

(binder precursor; cured coatings having inorg. filler particles in greater concns. near surfaces for improved scratch resistance)

REFERENCE COUNT: 320 THERE ARE 320 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L45 ANSWER 14 OF 14 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1999:603562 HCAPLUS

DOCUMENT NUMBER: 131:229601

TITLE: Fire- and heat-resistant polycarbonate-polyester blend compositions containing cyclic phosphates and inorganic salts

INVENTOR(S): Sato, Takahiro; Taketani, Yutaka

PATENT ASSIGNEE(S): Teijin Chemicals Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

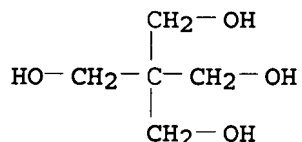
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 11256021	A	19990921	JP 1998-56773	19980309
JP 3899177	B2	20070328		
PRIORITY APPLN. INFO.:			JP 1998-56773	19980309

AB Title compns. comprise (A) polycarbonates 96-40, (B) polyesters 1-55, (C) cyclic phosphates 2-20, (D) inorg. salts selected from carbonates and phosphates of alkaline earth metals ≤ 10 , and (E) fluoropolymers 0.01-3 parts, where $A + B + C + D + E = 100$ parts and mol ratios of P atoms (from component C) to D ≥ 0.02 . Thus, a composition comprising Panlite L 1225WP 55.7, TR 8580 30, di-Ph pentaerythritol diphosphate (preparation given) 12, Polyflon FA 500 0.3, and calcium carbonate 2 parts gave flammability (UL 94) V-0 and deflection temperature (JIS K 7207, 18.5

kg/cm²-load) 104°.

- IT 115-77-5, Pentaerythritol, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (in preparation of cyclic phosphates for fire- and heat-resistant polycarbonate-polyester blend compns.)
- RN 115-77-5 HCAPLUS
- CN 1,3-Propanediol, 2,2-bis(hydroxymethyl)- (CA INDEX NAME)



- IC ICM C08L069-00
 ICS C08K013-02; C08L069-00; C08L067-02; C08L027-12; C08K005-523;
 C08K003-26; C08K003-32
- CC 37-6 (Plastics Manufacture and Processing)
- ST fire heat resistant polycarbonate polyester blend; cyclic phosphate fireproofing agent polycarbonate polyester; carbonate alk earth metal fireproofing compn; fluoropolymer Polyflon fireproofing compn; phenyl pentaerythritol phosphate fireproofing Panlite compn; calcium carbonate fireproofing compn
- IT Polyesters, uses
 RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
 (blends with polycarbonates; fire- and heat-resistant polycarbonate-polyester blend compns.)
- IT Polycarbonates, uses
 RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
 (blends with polyesters; fire- and heat-resistant polycarbonate-polyester blend compns.)
- IT Alkaline earth salts
 RL: MOA (Modifier or additive use); USES (Uses)
 (carbonates or phosphates; fire- and heat-resistant polycarbonate-polyester blend compns.)
- IT Fireproofing agents
 Heat-resistant materials
 (fire- and heat-resistant polycarbonate-polyester blend compns.)
- IT Fluoropolymers, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (fire- and heat-resistant polycarbonate-polyester blend compns.)
- IT Polymer blends
 RL: TEM (Technical or engineered material use); USES (Uses)
 (polycarbonate-polyester; fire- and heat-resistant polycarbonate-polyester blend compns.)
- IT 3812-32-6, Carbonate, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (alkaline earth metal salts; fire- and heat-resistant polycarbonate-polyester blend compns.)
- IT 9020-32-0, Polyethylene naphthalate 9020-73-9
 24968-12-5, TRB-J 25038-59-9, TR 8580, uses 26062-94-2
 51806-50-9, 1,4-Butanediol-naphthalenedicarboxylic acid copolymer,
 sru 52309-38-3
 RL: POF (Polymer in formulation); TEM (Technical or engineered

- material use); USES (Uses)
 (blends with polycarbonates; fire- and heat-resistant polycarbonate-**polyester** blend compns.)
- IT 24936-68-3, Panlite L 1225WP, uses 25037-45-0, Bisphenol A-carbonic acid copolymer
 RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
 (blends with **polyesters**; fire- and heat-resistant polycarbonate-**polyester** blend compns.)
- IT 14265-44-2, Phosphate, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (cyclic esters or alkaline earth metal salts; fire- and heat-resistant polycarbonate-**polyester** blend compns.)
- IT 471-34-1, Calcium carbonate, uses 513-77-9, Barium carbonate 546-93-0, Magnesium carbonate 7758-87-4, Calcium phosphate 9002-84-0, Polyflon FA 500
 RL: MOA (Modifier or additive use); USES (Uses)
 (fire- and heat-resistant polycarbonate-**polyester** blend compns.)
- IT 55120-33-7P, Diphenyl pentaerythritol diphosphate 97994-13-3P 239802-94-9P
 RL: IMF (Industrial manufacture); MOA (Modifier or additive use); PREP (Preparation); USES (Uses)
 (fireproofing agents; fire- and heat-resistant polycarbonate-**polyester** blend compns.)
- IT 770-12-7P, Phenyl dichlorophosphate 18350-98-6P
 RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
 (in preparation of cyclic phosphates for fire- and heat-resistant polycarbonate-**polyester** blend compns.)
- IT 98-54-4, 4-tert-Butylphenol 108-95-2, Phenol, reactions 115-77-5, Pentaerythritol, reactions 576-26-1, 2,6-Dimethylphenol 10025-87-3, Phosphorus oxychloride
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (in preparation of cyclic phosphates for fire- and heat-resistant polycarbonate-**polyester** blend compns.)

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L48 ANSWER 1 OF 4 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2003:945729 HCAPLUS
 DOCUMENT NUMBER: 139:398183
 TITLE: Grease-filled heat-resistant rolling bearing
 INVENTOR(S): Maeda, Kikuo; Aso, Mitsunari; Hirata, Masakazu
 PATENT ASSIGNEE(S): NTN Corp., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2003343576	A	20031203	JP 2002-155863	200205

29

PRIORITY APPLN. INFO.:

JP 2002-155863

200205

29

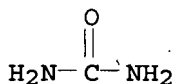
AB A rolling bearing is filled with grease containing a perfluoropolyether oil and synthetic oil and also a powdered fluororesin and urea compound as a thickening agent. The inner and outer ring in the bearing are from a steel tempered at $\geq 250^\circ$ and having a hardness HRC ≥ 59 . The steel contains C 0.6-1.3, Si 0.3-3.0, Ni 0.1-3.0, Mn 0.2-1.5, and Cr 0.3-5.0%. The bearing demonstrates no seizure or lubrication defects even in continuous operation at a high temperature and under a high load.

IT 57-13-6D, Urea, compds.

RL: DEV (Device component use); USES (Uses)
(thickening agent; grease-filled
heat-resistant rolling bearing)

RN 57-13-6 HCAPLUS

CN Urea (CA INDEX NAME)



IC ICM F16C033-58

ICS F16C033-32; F16C033-66

CC 55-6 (Ferrous Metals and Alloys)

Section cross-reference(s): 51

ST rolling bearing perfluoropolyether lubricating
grease

IT Thickening agents

(grease-filled heat-resistant rolling bearing)

IT Fluoropolymers, uses

RL: DEV (Device component use); USES (Uses)
(thickening agent; grease-filled
heat-resistant rolling bearing)

IT 57-13-6D, Urea, compds.

RL: DEV (Device component use); USES (Uses)
(thickening agent; grease-filled
heat-resistant rolling bearing)

L48 ANSWER 2 OF 4 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2001:235738 HCAPLUS

DOCUMENT NUMBER: 134:268624

TITLE: Lubricating grease

composition for automobile parts or household
appliances

INVENTOR(S): Endo, Toshiaki; Yamazaki, Satoshi; Kuwahara,
Hirofumi; Kawamura, Satoshi; Ishizaki, Tomonori;
Yamamoto, Yasuharu; Kato, Hiroaki

PATENT ASSIGNEE(S): Kyodo Yushi K. K., Japan; Toyoda Machine Works,
Ltd.

SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001089778	A	20010403	JP 1999-269773	19990924

PRIORITY APPLN. INFO.:

<-- JP 1999-269773

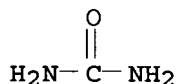
19990924

AB The title composition is prepared by blending a base oil with 0.5-20 weight of PTFE powder (average grain size $\leq 0.2 \mu\text{m}$) as solid lubricant, and a thickener such as urea compds. or Li soap. The base oil is preferably poly(α -olefin), paraffinic mineral oil, and/or alkyl di-Ph ethers.

IT 57-13-6D, Urea, compds., uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (thickener; lubricating grease
 composition for automobile parts or household appliances)

RN 57-13-6 HCAPLUS

CN Urea (CA INDEX NAME)



IC ICM C10M107-38
 ICS C10M115-08; C10M119-24; C10N020-06; C10N030-06; C10N040-04;
 C10N050-10

CC 51-8 (Fossil Fuels, Derivatives, and Related Products)

ST **lubricating grease** PTFE powder automobile part
 appliance

IT Antifriction materials
 (antifriction-antiwear **lubricating grease**
additives, PFTE powder; for **automobile parts** or
 household appliances)

IT **Lubricating grease** additives
 (antifriction-antiwear, PFTE powder; for automobile parts or
 household appliances)

IT Appliances
 (**lubricating grease** composition for automobile
 parts or household appliances)

IT **Fluoropolymers**, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (powder. solid lubricant as; **lubricating**
grease composition for automobile parts or household
 appliances)

IT **Lubricating grease** additives
 (urea compds.-based; for automobile parts or household
 appliances)

IT 1317-33-5, Molybdenum disulfide, uses 9002-84-0, KTL 610
 RL: MOA (Modifier or additive use); USES (Uses)
 (powder. solid lubricant as; **lubricating**
grease composition for automobile parts or household

appliances)
 IT 57-13-6D, Urea, compds., uses 37640-57-6,
 Melamine cyanurate
 RL: MOA (Modifier or additive use); USES (Uses)
 (thickener; lubricating grease
 composition for automobile parts or household appliances)

L48 ANSWER 3 OF 4 HCAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 1998:335644 HCAPLUS
 DOCUMENT NUMBER: 129:69812
 TITLE: Semi-solid tris(2-octyldodecyl)cyclopentane
 lubricant composition
 INVENTOR(S): Moriuchi, Tsutomu; Kimura, Hiroshi
 PATENT ASSIGNEE(S): Kyodo, Yushi, Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

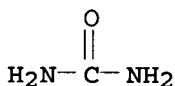
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 10140169	A	19980526	JP 1996-294939	199611 07

PRIORITY APPLN. INFO.: <-- JP 1996-294939 ' 199611
07

AB The lubricant composition contains tris(2-octyldodecyl)cyclopentane and a thickener or a solid lubricant additive. The lubricant composition has high compatibility with other **lubricating greases**, low vapor pressure, and good lubricity under high temperature and high vacuum. The lubricant composition is suitable for use in space stations, equipment for semiconductor fabrication, etc.

IT 57-13-6D, Urea, compds., uses
 RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
 (thickener; semi-solid lubricant composition containing tris(2-octyldodecyl)cyclopentane and thickener or solid lubricant additive)

RN 57-13-6 HCAPLUS
 CN Urea (CA INDEX NAME)



IC ICM C10M105-04
 ICS C10M169-02; C10M169-04; C10M105-04; C10M117-02; C10M115-08;
 C10M113-10; C10M113-12; C10M125-22; C10M139-00; C10M125-02;
 C10M147-02; C10M125-20; C10N010-12; C10N030-00; C10N030-08;
 C10N040-06; C10N050-10

CC 51-8 (Fossil Fuels, Derivatives, and Related Products)
 ST octyldodecyl cyclopentane lubricating grease

compatibility; thickener octyldodecyl cyclopentane
lubricating grease; lubricant solid additive
 octyldodecyl cyclopentane grease; semiconductor fabrication
 lubricant octyldodecyl cyclopentane; space station lubricant
 octyldodecyl cyclopentane

IT **Lubricating grease additives**

Lubricating greases

(semi-solid **lubricant** composition containing
 tris(2-octyldodecyl)cyclopentane and thickener or solid lubricant
 additive)

IT **Fluoropolymers, uses**

RL: TEM (Technical or engineered material use); USES (Uses)
 (solid lubricant; semi-solid lubricant composition containing
 tris(2-octyldodecyl)cyclopentane and thickener or solid lubricant
 additive)

IT 51-79-6D, Urethane, **compds. 57-13-6D, Urea,**

compds., uses 4485-12-5, Lithium stearate 7620-77-1,
 Lithium 12-hydroxystearate 7631-86-9D, Silica, **compds.**,
 uses

RL: **MOA (Modifier or additive use)**; TEM (Technical or
 engineered material use); **USES (Uses)**

(**thickener**; semi-solid lubricant composition containing
 tris(2-octyldodecyl)cyclopentane and thickener or solid lubricant
 additive)

L48 ANSWER 4 OF 4 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1977:520187 HCAPLUS

DOCUMENT NUMBER: 87:120187

TITLE: Relationship between the chemical structure of a
 lubricant and fretting

AUTHOR(S): Wunsch, F.

CORPORATE SOURCE: Klüber Lubrication Munchen KG, Munich, Fed. Rep.
 Ger.

SOURCE: Tribology International (1977), 10(3),
 147-51

CODEN: TRBIBK; ISSN: 0301-679X

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Greases and their base oils were applied between a steel ring
 oscillating around an axle and a supported spring steel band and
 tested for wear and fretting corrosion at load 1.5 N/mm, amplitude
 0.5mm, and frequency 50 Hz. The wear and fretting corrosion did not
 decrease with increasing viscosity. Rigid mols. with high
 mesomerism such as polyphenylsiloxanes, polyphenyl ethers, and
 fluorinated polyethers increased fretting corrosion. A relation
 between fretting corrosion and stick-slip behavior was established;
 the thermal and oxidative stability of the lubricants were not
 responsible for the fretting corrosion of lubricated surfaces. When
 oils were thickened to **lubricating greases**,
 their ability to prevent wear and fretting corrosion depended on the
 thickeners. The performance of polar basic oils and polyphenyl
 ethers was improved by condensed-urea thickeners. Alkali metal
 soaps and alkaline earth metal soaps deteriorated the performance of
 basic oils, and bentonite increased wear, but not fretting
 corrosion.

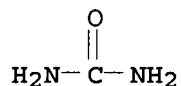
IT 57-13-6, uses and miscellaneous

RL: **USES (Uses)**

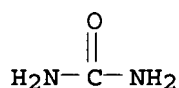
(**lubricating grease** thickeners, wear and
 fretting corrosion in presence of)

RN 57-13-6 HCAPLUS

CN Urea (CA INDEX NAME)



IT 57-13-6D, condensation polymers
 RL: **USES (Uses)**
 (lubricating-grease thickeners, wear and
 fretting corrosion in presence of)
 RN 57-13-6 HCAPLUS
 CN Urea (CA INDEX NAME)



CC 51-7 (Fossil Fuels, Derivatives, and Related Products)
 ST lubricating oil fretting corrosion; **grease**
 lubricating fretting corrosion
 IT Wear
 (by fretting corrosion, structure of **lubricating** oils
 and **greases** in relation to)
 IT **Lubricating greases**
 (composition of, fretting corrosion in relation to)
 IT Molecular structure-property relationship
 (fretting corrosion, of **lubricating** oils and
greases)
 IT Bentonite, uses and miscellaneous
 RL: **USES (Uses)**
 (lubricating grease thickeners, wear and
 fretting corrosion in presence of)
 IT Corrosion
 (fretting, chemical structure of **lubricating** oils and
greases in relation to)
 IT **Fluoropolymers**
 (polyether, lubricating oils, fretting corrosion in relation to
 structure of)
 IT **Lubricating grease additives**
 (thickeners, composition of, fretting corrosion in relation
 to)
 IT 57-13-6, uses and miscellaneous 7429-90-5D, soaps
 7439-93-2D, soaps 7440-39-3D, soaps
 RL: **USES (Uses)**
 (lubricating grease thickeners, wear and
 fretting corrosion in presence of)
 IT 57-13-6D, condensation polymers
 RL: **USES (Uses)**
 (lubricating-grease thickeners, wear and
 fretting corrosion in presence of)

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L50 ANSWER 1 OF 9 HCAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 1999:464261 HCAPLUS

DOCUMENT NUMBER: 131:90037
 TITLE: Biodegradable high hydroxyl synthetic ester base
 stocks and lubricants formed therefrom
 INVENTOR(S): Henry, Thomas H.; Schlosberg, Richard H.;
 Duncan, Carolyn B.
 PATENT ASSIGNEE(S): Exxon Chemical Patents Inc., USA
 SOURCE: PCT Int. Appl., 29 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9936387	A1	19990722	WO 1999-US581	19990111
<--				
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
AU 9923157	A	19990802	AU 1999-23157	19990111
<--				
PRIORITY APPLN. INFO.:			US 1998-71013P	P 19980113
<--				
			WO 1999-US581	W 19990111
<--				

OTHER SOURCE(S): MARPAT 131:90037

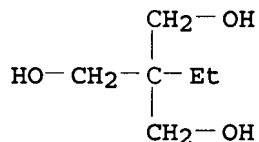
AB This invention relates to a biodegradable lubricant which is prepared from: at least one biodegradable synthetic ester base stock with a branched or linear alc. having the general formula $R(OH)_n$, wherein R is an aliphatic or cycloaliph. group having 2-20 carbon atoms and n is at least 2; and at least one branched or linear monocarboxylic acid which has a carbon number in the range C5 to C20; wherein the synthetic ester composition has 2-50% unconverted hydroxyl groups, based on the total amount of hydroxyl groups in the branched or linear alc.; wherein the ester base stock exhibits the following properties: at least 25% biodegrdn. in 28 days as measured by the Modified Sturm test; and a pour point of less than -25°; and an additive package.

IT 77-99-6 115-77-5, reactions 115-77-5D, Pentaerythritol, tech. 126-58-9

RL: RCT (Reactant); RACT (Reactant or reagent)
 (in preparation of biodegradable high-hydroxyl synthetic ester base stocks and lubricants formed therefrom)

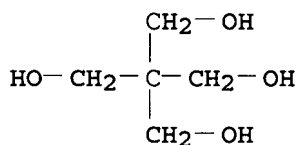
RN 77-99-6 HCAPLUS

CN 1,3-Propanediol, 2-ethyl-2-(hydroxymethyl)- (CA INDEX NAME)



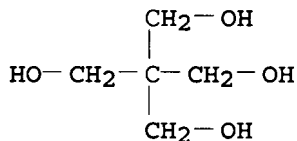
RN 115-77-5 HCAPLUS

CN 1,3-Propanediol, 2,2-bis(hydroxymethyl)- (CA INDEX NAME)



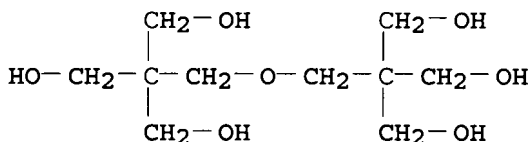
RN 115-77-5 HCAPLUS

CN 1,3-Propanediol, 2,2-bis(hydroxymethyl)- (CA INDEX NAME)



RN 126-58-9 HCAPLUS

CN 1,3-Propanediol, 2,2'-[oxybis(methylene)]bis[2-(hydroxymethyl)-
(9CI) (CA INDEX NAME)



IC ICM C07C069-28

ICS C07C069-30; C07C069-33; C10M105-38

CC 51-8 (Fossil Fuels, Derivatives, and Related Products)

IT Biodegradable materials

Drilling fluids

Hydraulic fluids

Lubricants

Lubricating greases

Lubricating oils

(biodegradable high hydroxyl synthetic ester base stocks and
lubricants formed therefrom)

IT 50-70-4, Sorbitol, reactions 56-81-5, 1,2,3-Propanetriol,
reactions 57-55-6, 1,2-Propanediol, reactions 64-19-7, Acetic
acid, reactions 75-98-9, 2,2-Dimethylpropionic acid 77-84-9
77-85-0, Trimethylolmethane 77-99-6 78-24-0,
Tripentaerythritol 79-09-4, Propionic acid, reactions 107-21-1,

1,2-Ethanediol, reactions 109-52-4, Pentanoic acid, reactions
 110-63-4, 1,4-Butanediol, reactions 111-14-8, Heptanoic acid
 112-05-0, Nonanoic acid 112-80-1, 9-Octadecenoic acid (9Z)-,
 reactions 115-77-5, reactions 115-77-5D,
 Pentaerythritol, tech. 124-07-2, Octanoic acid, reactions
 126-30-7 126-58-9 149-57-5, 2-Ethylhexanoic acid
 334-48-5, Decanoic acid 1330-19-4, Isoheptanoic acid 2163-42-0
 3302-10-1, 3,5,5-Trimethylhexanoic acid 7426-71-3,
 Trimethylolbutane 25103-52-0, Isooctanoic acid 26403-17-8,
 Isodecanoic acid 26896-18-4, Isononanoic acid 26896-20-8,
 Neodecanoic acid 33113-10-9, Neoheptanoic acid 59354-78-8,
 Neononanoic acid 101962-32-7, Neooctanoic acid

RL: RCT (Reactant); RACT (Reactant or reagent)

(in preparation of biodegradable high hydroxyl synthetic ester base
 stocks and lubricants formed therefrom)

REFERENCE COUNT: 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR
 THIS RECORD. ALL CITATIONS AVAILABLE IN
 THE RE FORMAT

L50 ANSWER 2 OF 9 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1999:260031 HCAPLUS

DOCUMENT NUMBER: 130:269548

TITLE: Thio-/mercapto-derivatives and use as
 antioxidant additives for lubricants and fuels
 INVENTOR(S): Francisco, Manuel A.; Puckace, James S.;
 Cameron, Stephen D.; Polizzotti, Richard Samuel
 PATENT ASSIGNEE(S): Exxon Research and Engineering Company, USA
 SOURCE: Eur. Pat. Appl., 27 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 909755	A1	19990421	EP 1998-117609	199809 17
<--				
CA 2243265	A1	19990326	CA 1998-2243265	199809 01
<--				
MX 9807764	A	20000630	MX 1998-7764	199809 23
<--				
BR 9803504	A	19991207	BR 1998-3504	199809 24
<--				
AU 9887079	A	19990415	AU 1998-87079	199809 25
<--				
JP 11158482	A	19990615	JP 1998-273833	

199809
28

PRIORITY APPLN. INFO.:

<--
US 1997-938650

A

199709
26<--
OTHER SOURCE(S): MARPAT 130:269548

AB Defined oil-soluble said derivs., more especially certain derivs. of pentaerythritol, are described. They have active C-S bonds (those containing sulfur bonded to carbon having a tertiary hydrogen and an electron withdrawing group). Said derivs. may be used to enhance the oxidation-resistance of lubricating oils, fuels and greases.

IT 115-77-5D, Pentaerythritol, derivs.

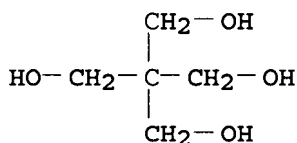
RL: MOA (Modifier or additive use); RCT (Reactant);

RACT (Reactant or reagent); USES (Uses)

(thio-/mercapto-derivs. and their use as antioxidant additives for lubricants and fuels)

RN 115-77-5 HCAPLUS

CN 1,3-Propanediol, 2,2-bis(hydroxymethyl)- (CA INDEX NAME)



IC ICM C07C323-52

ICS C10M135-26

CC 51-8 (Fossil Fuels, Derivatives, and Related Products)

IT Fuel additives

Lubricating greases

(thio-/mercapto-derivs. and their use as antioxidant additives for lubricants and fuels)

IT 115-77-5D, Pentaerythritol, derivs.

RL: MOA (Modifier or additive use); RCT (Reactant);

RACT (Reactant or reagent); USES (Uses)

(thio-/mercapto-derivs. and their use as antioxidant additives for lubricants and fuels)

REFERENCE COUNT: 17 THERE ARE 17 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L50 ANSWER 3 OF 9 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1999:233975 HCAPLUS

DOCUMENT NUMBER: 130:239798

TITLE: Complex esters, formulations comprising these esters and use thereof

INVENTOR(S): Kenbeek, Dirk; Verboom, Cornelis; Van Der Waal, Gijsbert

PATENT ASSIGNEE(S): Unichema Chemie B.V., Neth.

SOURCE: PCT Int. Appl., 21 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

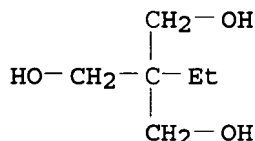
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

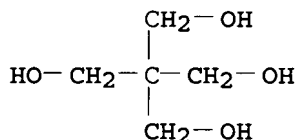
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9916849	A1	19990408	WO 1998-EP6145	19980928
<p>W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM</p> <p>RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG</p>				
CA 2304509	A1	19990408	CA 1998-2304509	19980928
AU 9911475	A	19990423	AU 1999-11475	19980928
EP 1019465	A1	20000719	EP 1998-954289	19980928
EP 1019465	B1	20030730		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
JP 2003522204	T	20030722	JP 2000-513925	19980928
AT 246239	T	20030815	AT 1998-954289	19980928
US 6462001	B1	20021008	US 2000-541166	20000331
PRIORITY APPLN. INFO.:				
			EP 1997-202992	A 19971001
			WO 1998-EP6145	W 19980928
<p>AB An ester resulting from an esterification reaction between at least one polyfunctional alc. and at least one polyfunctional carboxylic acid using a chain stopping agent to form ester bonds with the remaining hydroxyl or carboxyl groups is disclosed. The polyfunctional carboxylic acid comprises an aliphatic dicarboxylic acid containing from 9 to 18 carbon atoms, dimerized and/or trimerized fatty acids or mixts. thereof, with the proviso that dimerized and trimerized fatty acids do not constitute >80% by weight of the total amount of polyfunctional carboxylic acid used. The chain stopping</p>				

agent may be a monocarboxylic acid or a monofunctional alc. having at least 14 carbon atoms. The complex esters have a kinematic viscosity at 100 C of from 30 to 1000 cSt, preferably from 30 to 200 cSt. The complex ester is useful "as is" or as an additive and/or as a base fluid and/or a thickener in transmission oils, hydraulic fluids, four-stroke oils, fuel additives, compressor oils, greases, chain oils and for metal working metal rolling applications. A multigrade gear oil formulation comprising one or more of the above complex esters is also part of the invention.

IT 77-99-6, Trimethylolpropane 115-77-5,
Pentaerythritol, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(complex esters, lubricant formulations comprising
these esters and use thereof)
RN 77-99-6 HCAPLUS
CN 1,3-Propanediol, 2-ethyl-2-(hydroxymethyl)- (CA INDEX NAME)



RN 115-77-5 HCAPLUS
CN 1,3-Propanediol, 2,2-bis(hydroxymethyl)- (CA INDEX NAME)



IC ICM C10M105-42
ICS C10M105-44; C10M105-46; C10M129-78; C10M129-80; C10M129-82;
C10M169-04; C10M171-00; C10L001-18; C07C069-34; C07C069-50;
C07C069-593; C07C069-604

CC 51-8 (Fossil Fuels, Derivatives, and Related Products)

IT Fuel additives

Hydraulic fluids

Lubricating greases

Lubricating oils

(complex esters, lubricant formulations comprising
these esters and use thereof)

IT 75-84-3, Neopentyl alcohol 77-99-6, Trimethylolpropane
115-77-5, Pentaerythritol, reactions 124-04-9, Hexanedioic
acid, reactions 142-62-1, Hexanoic acid, reactions 143-07-7,
Dodecanoic acid, reactions 25265-71-8, Dipropylene glycol

RL: RCT (Reactant); RACT (Reactant or reagent)
(complex esters, lubricant formulations comprising
these esters and use thereof)

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN
THE RE FORMAT

L50 ANSWER 4 OF 9 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1998:762071 HCAPLUS

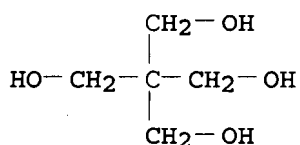
DOCUMENT NUMBER: 130:15685
 TITLE: liquid additive packages containing multifunctional additives for liquid fuels, lubricants, and polymer formulations
 INVENTOR(S): Dubs, Paul; Martin, Roger; Boss, Roland; Evans, Samuel
 PATENT ASSIGNEE(S): Ciba Specialty Chemicals Holding, Inc., Switz.
 SOURCE: Ger. Offen., 52 pp.
 CODEN: GWXXBX
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
DE 19820994	A1	19981119	DE 1998-19820994	199805 11
GB 2325239	A	19981118	GB 1998-9252	199805 01
GB 2325239 CA 2237279	B A1	20010808 19981113	CA 1998-2237279	199805 11
FR 2763340	A1	19981120	FR 1998-5956	199805 12
FR 2763340 IT 1299224	B1 B1	20000609 20000229	IT 1998-MI1029	199805 12
MX 9803740	A	20000630	MX 1998-3740	199805 12
JP 10316986	A	19981202	JP 1998-148470	199805 13
PRIORITY APPLN. INFO.:			CH 1997-1123	A 199705 13

AB Liquid multifunctional additives, especially for use in fuels, lubricants, and polymer formulations, consist of the reaction product of components, consisting of: (1) an active-hydrogen-containing compound, (2) a glyceride or glyceridic oil, (3) a hydroxy-substituted phenylcarboxylic acid, (4) a hydrocarbon oil solvent (typically C9-13-alkylbenzene or C12-20-alkane), and, optionally, a C1-18-alkyl (alkyl)acrylate ester. The active-hydrogen-containing component is suitably chosen from pentaerythritol, thiodiethylene glycol, 1,4-butanediol, 1,2-propanediol, diethylene glycol, triethylene

glycol, diethanolamine, or glycerin. Typical glyceridic oils are coconut oil, rape oil, sunflower oil, soybean oil, or castor oil. Component (3) is typically 3-(3'-tert-butyl-4'-hydroxy-5'-methylphenyl)propanoic acid Me ester, 3-(3',5'-di-tert-butyl-4'-hydroxyphenyl)propanoic acid Me ester, and Ar-CH₂SCH₂CO₂Me (Ar = 3,5-di-tert-butyl-4-hydroxyphenyl). The additives especially have antiwear, antioxidant, and stabilizer (i.e., against heat, light, and oxygen) activity in liquid fuels, lubricating oils, hydraulic fluids, metalworking oils, and polyolefin or polystyrene copolymers.

IT 115-77-5D, Pentaerythritol, reaction products with glycerin and fats and glyceridic oils
 RL: MOA (Modifier or additive use); RCT (Reactant);
 RACT (Reactant or reagent); USES (Uses)
 (additive package containing; packages containing liquid multifunctional additives for liquid fuels, lubricants, and polymers)
 RN 115-77-5 HCAPLUS
 CN 1,3-Propanediol, 2,2-bis(hydroxymethyl)- (CA INDEX NAME)



IC ICM C07C069-732
 ICS C07C069-54; C07C323-52; C07C229-00; C10M129-74; C10M135-22;
 C10M133-02; C08K005-00; C10L001-10
 ICA C07D211-10; C07D227-00; C07D493-04
 CC 51-8 (Fossil Fuels, Derivatives, and Related Products)
 IT Diesel fuel additives
 Fuel oil additives
 Gasoline additives
 Lubricating grease additives
 Lubricating oil additives
 (multifunctional; packages containing liquid multifunctional additives for liquid fuels, lubricants, and polymers)
 IT 56-81-5D, Glycerin, reaction products with fats and glyceridic oils and (di-tertbutyl-hydroxyphenyl)propionic acid Me ester 57-55-6D, 1,2-Propanediol, reaction products with glycerin and fats and glyceridic oils, uses 96-33-3D, Methyl acrylate, reaction products with fats and glyceridic oils and (di-tertbutyl-hydroxyphenyl)propionic acid Me ester 110-63-4D, 1,4-Butanediol, reaction products with glycerin and fats and glyceridic oils, uses 111-42-2D, Diethanolamine, reaction products with glycerin and fats and glyceridic oils 111-46-6D, Diethylene glycol, reaction products with glycerin and fats and glyceridic oils 111-48-8D, Thiodiethylene glycol, reaction products with glycerin and fats and glyceridic oils 112-27-6D, Triethylene glycol, reaction products with glycerin and fats and glyceridic oils 115-77-5D, Pentaerythritol, reaction products with glycerin and fats and glyceridic oils 128-39-2D, 2,6-Di-tert-butylphenol, reaction products with fats and glyceridic oils and (di-tertbutyl-hydroxyphenyl)propionic acid Me ester 2219-82-1D, 2-tert-Butyl-6-methylphenol, reaction products with fats and glyceridic oils and (di-tertbutyl-hydroxyphenyl)propionic acid Me ester 6386-38-5D, Benzenepropanoic acid, 3,5-bis(1,1-dimethylethyl)-4-hydroxy-, methyl ester, reaction products with glycerin and fats and glyceridic oils 24794-55-6, Benzenepropanoic

acid, 3-(1,1-dimethylethyl)-4-hydroxy-5-methyl- 51511-20-7D,
Acetic acid, [[[3,5-bis(1,1-dimethylethyl)-4-
hydroxyphenyl]methyl]thio]-, methyl ester, reaction products with
glycerin and fats and glyceridic oils

RL: MOA (Modifier or additive use); RCT (Reactant);

RACT (Reactant or reagent); USES (Uses)

(additive package containing; packages containing liquid multifunctional
additives for liquid fuels, lubricants, and polymers)

L50 ANSWER 5 OF 9 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1998:414716 HCAPLUS

DOCUMENT NUMBER: 129:83615

TITLE: Biodegradable branched synthetic ester base
stocks and highly biodegradable lubricants with
good cold flow properties, good solubility with
dispersants, and good lubricity formed therefrom

INVENTOR(S): Duncan, Carolyn Boggus; Meade, Leah Katherine

PATENT ASSIGNEE(S): Exxon Chemical Patents, Inc., USA

SOURCE: U.S., 18 pp., Cont.-in-part of U.S. Ser. No.
351,990, abandoned.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 8

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 5767047	A	19980616	US 1995-569272	199512 08
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CA 2207393	A1	19960613	CA 1995-2207393	199512 08
			<--	
CA 2208217	A1	19960613	CA 1995-2208217	199512 08
			<--	
CN 1172497	A	19980204	CN 1995-197294	199512 08
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CN 1068900	B	20010725		
CN 1173195	A	19980211	CN 1995-197392	199512 08
			<--	
CN 1056874	B	20000927		
CN 1173196	A	19980211	CN 1995-197393	199512 08
			<--	
CN 1064703	B	20010418		
CN 1173197	A	19980211	CN 1995-197399	199512 08
			<--	

ES 2165440	T3	20020316	ES 1995-943099	199512 08
			<--	
PT 796308	T	20020328	PT 1995-943099	199512 08
			<--	
PT 802962	T	20020830	PT 1995-943770	199512 08
			<--	
ES 2173213	T3	20021016	ES 1995-943770	199512 08
			<--	
ES 2174979	T3	20021116	ES 1995-943098	199512 08
			<--	
CN 1277249	A	20001220	CN 2000-102602	200002 24
			<--	
CN 1288941	A	20010328	CN 2000-117902	200005 25
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CN 1109737	B	20030528		
PRIORITY APPLN. INFO.:			US 1994-351990	B2 199412 08
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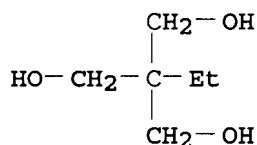
AB A biodegradable lubricant which is prepared from: .apprx.60-99% by weight of at least one biodegradable synthetic ester base stock which comprises the reaction product of: a branched or linear alc. having the general formula R(OH)_n, wherein R is an aliphatic or cyclo-aliphatic group having from .apprx.2 to 20 carbon atoms and n is at least 2; and mixed acids comprising .apprx.30 to 80 M % of a linear acid having a carbon number in the range between about C5 to C12, and .apprx.20 to 70 M % of at least one branched acid having a carbon number in the range between about C5 to C10 and wherein no >10% of the branched acids used to form the biodegradable synthetic ester base stock contains a quaternary carbon; wherein the ester base stock exhibits the following properties: at least 60% biodegrdn. in 28 days as measured by the Modified Sturm test; a pour point of less than -25°.; a viscosity of <7500 cps at -25°.; and oxidative stability of up to 45 min as measured by HPDSC.

IT 77-99-6, Trimethylolpropane 115-77-5, Pentaerythritol, reactions

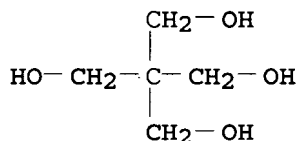
RL: RCT (Reactant); RACT (Reactant or reagent)
(biodegradable branched synthetic ester base stocks and highly biodegradable lubricants with good cold flow properties, good solubility with dispersants, and good lubricity formed therefrom)

RN 77-99-6 HCAPLUS

CN 1,3-Propanediol, 2-ethyl-2-(hydroxymethyl)- (CA INDEX NAME)



RN 115-77-5 HCAPLUS
 CN 1,3-Propanediol, 2,2-bis(hydroxymethyl)- (CA INDEX NAME)



IC ICM C10M129-70
 ICS C10M129-74
 INCL 508485000
 CC 51-8 (Fossil Fuels, Derivatives, and Related Products)
 IT Drilling fluids
 Hydraulic fluids
 Lubricants
Lubricating greases
 Lubricating oils
 (biodegradable branched synthetic ester base stocks and highly
 biodegradable lubricants with good cold flow properties, good
 solubility with dispersants, and good lubricity formed therefrom)
 IT 77-99-6, Trimethylolpropane 115-77-5,
 Pentaerythritol, reactions 25103-52-0, Cekanolic c8 acid
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (biodegradable branched synthetic ester base stocks and highly
 biodegradable lubricants with good cold flow
 properties, good solubility with dispersants, and good
 lubricity formed therefrom)
 REFERENCE COUNT: 28 THERE ARE 28 CITED REFERENCES AVAILABLE
 FOR THIS RECORD. ALL CITATIONS AVAILABLE
 IN THE RE FORMAT

L50 ANSWER 6 OF 9 HCAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 1997:499166 HCAPLUS
 DOCUMENT NUMBER: 127:178622
 TITLE: High stability and low metals esters based on
 3,5,5-trimethyl-1-hexanol
 INVENTOR(S): Schlosberg, Richard H.; Turner, David W.;
 Krevalis, Martin A.; Munley, William J., Jr.;
 Aldrich, Haven S.
 PATENT ASSIGNEE(S): Exxon Chemical Patents Inc., USA
 SOURCE: PCT Int. Appl., 50 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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WO 9726238

A1

19970724

WO 1997-US660

199701
16

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W: AL, AU, BA, BB, BG, BR, CA, CN, CU, CZ, EE, GE, HU, IL, IS,
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SG, SI, SK, TR, TT, UA, UZ, VN, AM, AZ, BY, KG, KZ, MD, RU,
TJ, TM

RW: KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB,
GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA,
GN, ML, MR, NE, SN, TD, TG

US 5798319

A

19980825

US 1996-586117

199601
16

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CA 2242389

A1

19970724

CA 1997-2242389

199701
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AU 9722427

A

19970811

AU 1997-22427

199701
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AU 720560

B2

20000601

EP 880495

A1

19981202

EP 1997-905578

199701
16

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R: BE, DE, FR, GB, IT, SE

CN 1211236

A

19990317

CN 1997-192206

199701
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CN 1093851

B

20021106

BR 9706996

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BR 1997-6996

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JP 2000516970

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JP 1997-526166

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19980715

NO 1998-3257

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PRIORITY APPLN. INFO.:

US 1996-586117

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WO 1997-US660

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199701
16

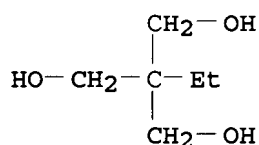
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OTHER SOURCE(S): MARPAT 127:178622

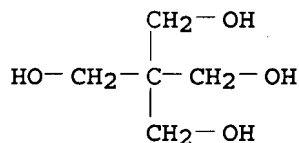
AB A lubricant which is prepared from at least one synthetic ester composition exhibiting thermal and oxidative stability comprises the reaction product of: 3,5,5-trimethyl-1-hexanol and an acid or anhydride; and a lubricant additive package; whereby the incorporation of an

antioxidant in the lubricant additive package for the purpose of maintaining oxidative and thermal stability of the crankcase lubricating oil formulation to >20 min as measured by HPDSC at 220°, 3.445 MPa air and 0.5 weight% dioctyl di-Ph amine can be either reduced or eliminated. The synthetic ester composition preferably exhibits the following addnl. properties: a metals content of <10 ppm, an ash content of <15 ppm, a total acid number of <0.05 mg KOH/g, and a volume resistivity of .gtorsim.1 x 10¹¹ ω-cm.

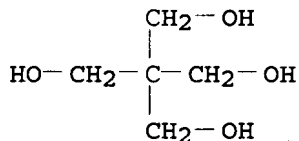
IT 77-99-6 115-77-5, reactions 115-77-5D,
tech. 126-58-9, Dipentaerythritol
RL: RCT (Reactant); RACT (Reactant or reagent)
(in preparation of high-stability and low-metal esters based on
3,5,5-trimethyl-1-hexanol for lubricating compns.)
RN 77-99-6 HCAPLUS
CN 1,3-Propanediol, 2-ethyl-2-(hydroxymethyl)- (CA INDEX NAME)



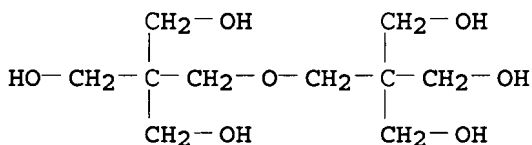
RN 115-77-5 HCAPLUS
CN 1,3-Propanediol, 2,2-bis(hydroxymethyl)- (CA INDEX NAME)



RN 115-77-5 HCAPLUS
CN 1,3-Propanediol, 2,2-bis(hydroxymethyl)- (CA INDEX NAME)



RN 126-58-9 HCAPLUS
CN 1,3-Propanediol, 2,2'-[oxybis(methylene)]bis[2-(hydroxymethyl)-
(9CI) (CA INDEX NAME)



IC ICM C07C069-44
ICS C07C069-80; C07C069-82; C07C069-76; C10M105-32; C10M171-00;

C09K007-06; C07C067-08; C10M169-04

CC 51-8 (Fossil Fuels, Derivatives, and Related Products)

IT Drilling fluids

Hydraulic fluids

Lubricating greases

(high-stability and low-metal esters based on

3,5,5-trimethyl-1-hexanol for lubricating compns.)

IT 57-55-6, 1,2-Propanediol, reactions 77-84-9 77-85-0,

Trimethylolethane 77-99-6 107-21-1, 1,2-Ethanediol,

reactions 110-63-4, 1,4-Butanediol, reactions 115-77-5,

reactions 115-77-5D, tech. 126-30-7 126-58-9,

Dipentaerythritol 7426-71-3, Trimethylolbutane

RL: **RCT (Reactant); RACT (Reactant or reagent)**

(in preparation of high-stability and low-metal esters based on

3,5,5-trimethyl-1-hexanol for lubricating compns.)

L50 ANSWER 7 OF 9 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1996:685316 HCAPLUS

DOCUMENT NUMBER: 125:304802

TITLE: Polyol ester compositions with unconverted hydroxyl groups

INVENTOR(S): Schlosberg, Richard Henry; Aldrich, Haven S.;
Sherwood-Williams, Lavonda Denise; Szobota, John S.; Krevallis, Martin Anthony; Leta, Daniel P.;
Holt, David G. L.; Gordon, Fay H.

PATENT ASSIGNEE(S): Exxon Chemical Patents Inc., USA

SOURCE: PCT Int. Appl., 62 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

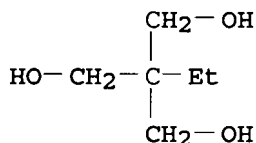
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9628525	A1	19960919	WO 1996-US3518	19960314
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W: AU, BR, CA, CN, FI, JP, NO, PL, SG				
RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
US 5665686	A	19970909	US 1995-403366	19950314
<--				
CA 2214350	A1	19960919	CA 1996-2214350	19960314
<--				
AU 9653641	A	19961002	AU 1996-53641	19960314
<--				
AU 712058	B2	19991028		
BR 9607236	A	19971111	BR 1996-7236	19960314
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EP 815186	A1	19980107	EP 1996-910450	199603 14
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EP 815186	B1	20050209		
R: AT, BE, CH, DE, DK, FR, GB, IT, LI, LU, NL, SE				
EP 835922	A1	19980415	EP 1997-203762	199603 14
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R: AT, BE, CH, DE, DK, FR, GB, IT, LI, LU, NL, SE				
CN 1188504	A	19980722	CN 1996-193463	199603 14
<--				
CN 1089110	B	20020814		
JP 11501969	T	19990216	JP 1996-527829	199603 14
<--				
AT 288954	T	20050215	AT 1996-910450	199603 14
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NO 9704223	A	19971105	NO 1997-4223	199709 12
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FI 9703689	A	19971111	FI 1997-3689	199709 15
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CN 1302855	A	20010711	CN 2000-108763	200005 31
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CN 1109736	B	20030528		
PRIORITY APPLN. INFO.:			US 1995-403366	A 199503 14
<--				
			EP 1996-910450	A3 199603 14
<--				
			WO 1996-US3518	W 199603 14
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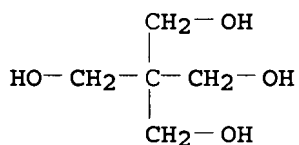
OTHER SOURCE(S): MARPAT 125:304802

AB A synthetic ester composition which exhibits thermal and oxidative stability, lower friction coefficient, and lower wear, comprises the reaction product of a branched or linear alc. having the general formula R(OH)_n, wherein R is an aliphatic or cycloaliph. group having 2-20 carbon atoms and n is at least 2; and at least one branched monocarboxylic acid which has a C number of 5-13; wherein the synthetic ester composition has .apprx.5-35% unconverted hydroxyl groups, based on the total amount of hydroxyl groups in the branched or linear alc. The polyol ester composition can be used in the formulation of various lubricants.

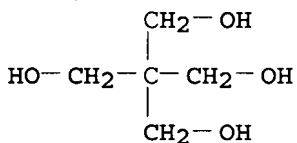
IT 77-99-6, Trimethylolpropane 115-77-5,
 Pentaerythritol, reactions 115-77-5D, Pentaerythritol,
 tech. 126-58-9, Dipentaerythritol
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (in preparation of polyol ester compns. with unconverted hydroxyl
 groups for lubricants with enhanced thermal/oxidative
 stability)
 RN 77-99-6 HCAPLUS
 CN 1,3-Propanediol, 2-ethyl-2-(hydroxymethyl)- (CA INDEX NAME)



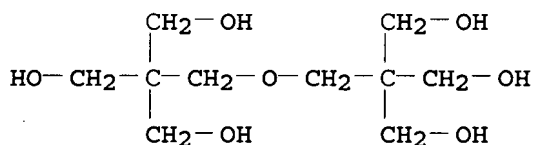
RN 115-77-5 HCAPLUS
 CN 1,3-Propanediol, 2,2-bis(hydroxymethyl)- (CA INDEX NAME)



RN 115-77-5 HCAPLUS
 CN 1,3-Propanediol, 2,2-bis(hydroxymethyl)- (CA INDEX NAME)



RN 126-58-9 HCAPLUS
 CN 1,3-Propanediol, 2,2'-[oxybis(methylene)]bis[2-(hydroxymethyl)-
 (9CI) (CA INDEX NAME)



IC ICM C10M105-40
 ICS C10M169-04; C10M105-54
 CC 51-8 (Fossil Fuels, Derivatives, and Related Products)
 IT Drilling fluids and muds
 Hydraulic fluids
 Lubricating greases
 (polyol ester compns. with unconverted hydroxyl groups with
 enhanced thermal/oxidative stability for)

IT 50-70-4, Sorbitol, reactions 56-81-5, Glycerol, reactions
 57-55-6, Propylene glycol, reactions 64-19-7, Acetic acid,
 reactions 75-98-9, 2,2-Dimethylpropionic acid 77-84-9 77-85-0,
 Trimethylolethane 77-99-6, Trimethylolpropane 78-24-0,
 Tripentaerythritol 79-09-4, Propionic acid, reactions 107-21-1,
 Ethylene glycol, reactions 110-63-4, 1,4-Butanediol, reactions
 111-14-8, Heptanoic acid 111-20-6, Sebäcic acid, reactions
 112-05-0, Nonanoic acid 115-77-5, Pentaerythritol,
 reactions 115-77-5D, Pentaerythritol, tech. 123-99-9,
 Azelaic acid, reactions 124-04-9, Adipic acid, reactions
 124-07-2, Octanoic acid, reactions 126-30-7, Neopentyl glycol
 126-58-9, Dipentaerythritol 149-57-5, 2-Ethylhexanoic acid
 334-48-5, Decanoic acid 646-07-1, Isohexanoic acid 693-23-2,
 Dodecanedioic acid 1330-19-4, Isoheptanoic acid 2163-42-0,
 2-Methyl-1,3-propanediol 3302-10-1, 3,5,5-Trimethylhexanoic acid
 7426-71-3, Trimethylolbutane 25103-52-0, Isooctanoic acid
 26403-17-8, Isodecanoic acid 26896-18-4, Isononanoic acid
 26896-20-8, Neodecanoic acid 33113-10-9, Neoheptanoic acid
 59354-78-8, Neononanoic acid 101962-32-7, Neooctanoic acid

RL: RCT (Reactant); RACT (Reactant or reagent)

(in preparation of polyol ester compns. with unconverted hydroxyl
 groups for lubricants with enhanced thermal/oxidative
 stability)

L50 ANSWER 8 OF 9 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1996:632116 HCAPLUS

DOCUMENT NUMBER: 125:252691

TITLE: Biodegradable lubricating base oil, lubricating
 oil composition containing the same and use
 thereof

INVENTOR(S): Inaya, Shuichi; Sawada, Hiroki; Kobayashi,
 Yuichiro; Hagihara, Toshiya

PATENT ASSIGNEE(S): Kao Corporation, Japan

SOURCE: PCT Int. Appl., 70 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

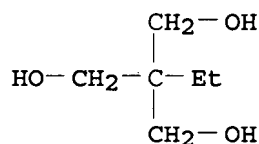
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9625474	A1	19960822	WO 1996-JP320	199602 13
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W: CN, US				
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
JP 09217074	A	19970819	JP 1996-50934	199602 13
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JP 3759781	B2	20060329		
EP 809685	A1	19971203	EP 1996-901999	199602 13
<--				
EP 809685	B1	20061025		

R: DE, ES, FR, GB
 CN 1181103 A 19980506 CN 1996-193211 199602
 13
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 CN 1085243 B 20020522
 US 5916854 A 19990629 US 1997-875899 199708
 07
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 JP 2005281707 A 20051013 JP 2005-184125 200506
 23
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 PRIORITY APPLN. INFO.: JP 1995-50495 A 199502
 14
 <--
 JP 1995-129766 A 199504
 28
 <--
 JP 1995-345191 A 199512
 06
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 JP 1996-50934 A3 199602
 13
 <--
 WO 1996-JP320 W 199602
 13

AB The present invention describes a biodegradable lubricating base oil obtained by carrying out an addition reaction of an alkylene oxide and a transesterification in a mixture of fats and oils, a polyhydric alc. or an aliphatic carboxylic acid, and an alkylene oxide, the mixture containing 5 to 150 mol of the alkylene oxide to 1 mol of the fats and oils; a biodegradable lubricating base oil obtained by carrying out esterification of all or part of the hydroxyl group in the above fats and oils derivative using an aliphatic carboxylic acid or ester derivative thereof. Further, a biodegradable lubricating oil composition containing the biodegradable lubricating base oil and the use thereof are also described.

IT 77-99-6, Trimethylolpropane
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (biodegradable lubricating base oil,
 lubricating oil composition containing the same and use thereof)

RN 77-99-6 HCAPLUS
 CN 1,3-Propanediol, 2-ethyl-2-(hydroxymethyl)- (CA INDEX NAME)



IC ICM C10M101-04
 ICS C10M111-00; C10M109-02
 ICI C10M111-00, C10M101-00, C10M101-04; C10N040-08, C10N070-00
 CC 51-8 (Fossil Fuels, Derivatives, and Related Products)
 IT Hydraulic fluids
 Lubricating greases
 (biodegradable lubricating base oil, lubricating oil
 composition containing the same and use thereof)
 IT 56-81-5, Glycerol, reactions 57-10-3, Palmitic acid, reactions
 67-56-1, Methanol, reactions 75-21-8, Ethylene oxide, reactions
 77-99-6, Trimethylolpropane 124-07-2, Caprylic acid,
 reactions 149-57-5, 2-Ethylhexanoic acid 1310-58-3, Potassium
 hydroxide, reactions 9003-29-6, Polybutene 150872-29-0, Empol
 1008
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (biodegradable lubricating base oil,
 lubricating oil composition containing the same and use thereof)

L50 ANSWER 9 OF 9 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1996:431444 HCAPLUS

DOCUMENT NUMBER: 125:91042

TITLE: High oleic polyol esters, compositions and
 lubricants, functional fluids and greases
 containing the same

INVENTOR(S): Lawate, Saurabh Shripad; Lal, Kasturi

PATENT ASSIGNEE(S): Lubrizol Corp., USA

SOURCE: Eur. Pat. Appl., 35 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 712834	A1	19960522	EP 1995-308145	199511 14
EP 712834	B1	19990714		
R: BE, DE, ES, FR, GB, IT, NL, SE				
BR 9504838	A	19971007	BR 1995-4838	199510 17
CA 2162441	A1	19960516	CA 1995-2162441	199511 08
JP 08208563	A	19960813	JP 1995-290190	199511 08
AU 9537780	A	19960523	AU 1995-37780	199511 10
AU 697824	B2	19981015		
ES 2136805	T3	19991201	ES 1995-308145	

199511
14

US 5773391

A

19980630

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US 1997-966769199711
07

PRIORITY APPLN. INFO.:

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US 1994-339821 A199411
15<--
US 1997-794105 B1199702
03

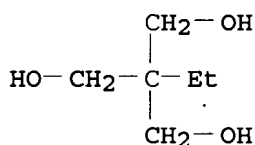
AB A polyol ester is described which is derived from: (A) an aliphatic or alicyclic polyol: and (B) an aliphatic monocarboxylic mixture derived from a natural vegetable oil, said acid mixture comprising at least .apprx.72% by weight of oleic acid. The invention also relates to compns. comprising the polyol esters and at least one antioxidant, and lubricating oil compns. comprising an oil of lubricating viscosity and the polyol esters of the invention. Lubricating oil compns. comprising polyol esters of the invention, at least one antioxidant, and an oil of lubricating viscosity also are described and are particularly useful.

IT 77-99-6, Trimethylolpropane 115-77-5,
Pentaerythritol, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)
(high oleic polyol esters, compns. and lubricant,s
functional fluids and greases containing the same)

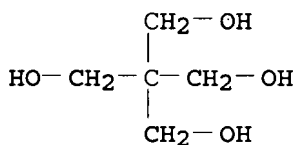
RN 77-99-6 HCAPLUS

CN 1,3-Propanediol, 2-ethyl-2-(hydroxymethyl)- (CA INDEX NAME)



RN 115-77-5 HCAPLUS

CN 1,3-Propanediol, 2,2-bis(hydroxymethyl)- (CA INDEX NAME)



IC ICM C07C069-52

ICS C10M105-38; C07C067-62; C10M129-10; C10M133-12; C10M133-40

CC 51-8 (Fossil Fuels, Derivatives, and Related Products)

IT **Lubricating greases**

Lubricating oils

(high oleic polyol esters, compns. and lubricant,s functional
fluids and greases containing the same)

IT 75-75-2, Methane sulfonic acid 77-99-6, Trimethylolpropane

107-21-1, Ethylene glycol, reactions 112-80-1, Oleic acid, reactions 115-77-5, Pentaerythritol, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(high oleic polyol esters, compns. and lubricant,s functional fluids and greases containing the same)

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L52 ANSWER 1 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2004:1128691 HCAPLUS
DOCUMENT NUMBER: 142:59484
TITLE: **Lubricating grease**
composition for roller bearings
INVENTOR(S): Iso, Kenichi; Naka, Michiharu; Kinoshita, Hirotsugu; Sakamoto, Kiyomi
PATENT ASSIGNEE(S): NSK Ltd., Japan; Nippon Oil Corporation
SOURCE: Jpn. Kokai Tokkyo Koho, 21 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

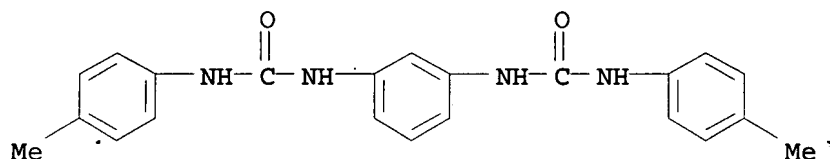
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004359809	A	20041224	JP 2003-159583	20030604

PRIORITY APPLN. INFO.: JP 2003-159583
20030604

AB The title composition comprises a lubricating base oil containing synthetic esters, a thickener containing diurea compds. of formula: $R_1NHCONHR_2NHCONHR_1$ (R_1 = alkyl group; R_2 = alkylene group), and 4-12 weight% of additives containing ≥ 1 phenol compds., amine compds., S compds. or P compds. The base oil contains mainly dialkyldiphenyl esters and has a kinematic viscosity of 10-400 mm²/s, preferably 20-250 mm²/s at 40°. The composition is superior in durability and lubricity for roller bearings under conditions of high temperature, high speed and extreme-pressure load.

IT 122870-29-5
RL: MOA (Modifier or additive use); USES (Uses)
(**antiwear** additives containing; **lubricating grease** composition for roller bearings)

RN 122870-29-5 HCAPLUS
CN Urea, N,N'-(methyl-1,3-phenylene)bis[N'-(4-methylphenyl)- (9CI)
(CA INDEX NAME)



D1-Me

IC ICM C10M169-02
 ICS C10M101-02; C10M105-18; C10M107-34; C10M115-08; C10M129-10;
 C10M133-12; C10M135-36; C10M137-10; F16C033-66; C10N010-04;
 C10N030-06; C10N030-08; C10N040-02; C10N050-10
 CC 51-8 (Fossil Fuels, Derivatives, and Related Products)
 ST **lubricating grease** diurea thickener roller
 bearing
 IT Bearings
 (roller; **lubricating grease** composition for roller
 bearings)
 IT **Lubricating grease** additives
 (thickeners; **lubricating grease** composition for
 roller bearings)
 IT 90-30-2, n-Phenyl-1-naphthylamine 101-67-7, p,p'-
 Dioctyldiphenylamine 18984-88-8 19210-06-1 97746-57-1
 113634-59-6 122870-29-5 133336-92-2 169472-91-7
 187333-36-4 187486-01-7 544696-53-9 544696-54-0
 RL: MOA (Modifier or additive use); USES (Uses)
 (**antiwear** additives containing; **lubricating
 grease** composition for roller bearings)
 IT 101-84-8D, Diphenyl ether, C8-20 dialkyl derivs.
 RL: MOA (Modifier or additive use); USES (Uses)
 (**lubricating grease** composition for roller
 bearings)
 IT 101-68-8D, Diphenylmethanediisocyanate, reaction products with
 alkylamines 108-91-8D, Cyclohexylamine, reaction products with
 diphenylmethanediisocyanate 124-30-1D, Stearylamine, reaction
 products with diphenylmethanediisocyanate 624-40-8, Diurea
 RL: MOA (Modifier or additive use); USES (Uses)
 (thickener; **lubricating grease** composition for
 roller bearings)

L52 ANSWER 2 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2003:693591 HCAPLUS

DOCUMENT NUMBER: 139:199778

TITLE: **Lubricating grease**
 composition for resin contact surface of
 automobile parts or household appliances

INVENTOR(S): Segawa, Yoichi; Shimura, Akihiko; Hashimoto,
 Tatsuya

PATENT ASSIGNEE(S): NOK Kluber Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003246996	A	20030905	JP 2002-50738	20020227

PRIORITY APPLN. INFO.:

JP 2002-50738

20020227

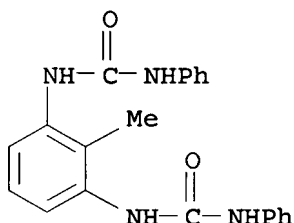
AB The title composition comprises a lubricating base oil having kinematic viscosity 5-3000 mm²/s, a thickener containing metal soaps or urea compds., a corrosion inhibitor containing sarcosine derivs., and/or a phenol-series antioxidant. The composition is superior in durability and lubricity for resin-resin or resin-metal contact surface of automobile parts or household appliances.

IT 149358-54-3

RL: MOA (Modifier or additive use); USES (Uses)
(thickener; **lubricating grease** composition for resin contact surface of automobile parts or household appliances)

RN 149358-54-3 HCAPLUS

CN Urea, N,N'-(2-methyl-1,3-phenylene)bis[N'-phenyl- (9CI) (CA INDEX NAME)



IC ICM C10M169-02

ICS C10M129-10; C10M129-70; C10M129-74; C10M133-06; C10N040-00;
C10N050-10

CC 51-8 (Fossil Fuels, Derivatives, and Related Products)

ST **lubricating grease** lithium soap thickener
automobile household appliance

IT **Lubricating grease** additives

(antioxidants, phenol-series; **lubricating grease** composition for resin contact surface of automobile parts or household appliances)

IT **Lubricating grease** additives

(corrosion inhibitors, sarcosine derivs.; **lubricating grease** composition for resin contact surface of automobile parts or household appliances)

IT Soaps

RL: MOA (Modifier or additive use); USES (Uses)
(lithium, thickener; **lubricating grease** composition for resin contact surface of automobile parts or household appliances)

IT Antioxidants

(**lubricating grease** additives, phenol-series;
lubricating grease composition for resin contact surface of automobile parts or household appliances)

IT Corrosion inhibitors
 (lubricating grease additives, sarcosine
 derivs.; lubricating grease composition for resin
 contact surface of automobile parts or household appliances)

IT Appliances
 (lubricating grease composition for resin contact
 surface of automobile parts or household appliances)

IT Lubricating grease additives
 (thickeners, metal soap or urea compds.; lubricating
 grease composition for resin contact surface of automobile
 parts or household appliances)

IT 1709-70-2 1843-03-4 27676-62-6
 RL: MOA (Modifier or additive use); USES (Uses)
 (antioxidant; lubricating grease composition for
 resin contact surface of automobile parts or household
 appliances)

IT 110-25-8 36060-61-4 56073-34-8D, C12-18 alkyl derivs.
 RL: MOA (Modifier or additive use); USES (Uses)
 (corrosion inhibitor; lubricating grease
 composition for resin contact surface of automobile parts or household
 appliances)

IT 149358-54-3
 RL: MOA (Modifier or additive use); USES (Uses)
 (thickener; lubricating grease composition for
 resin contact surface of automobile parts or household
 appliances)

L52 ANSWER 3 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1997:204545 HCAPLUS

DOCUMENT NUMBER: 126:201545

TITLE: Lubricating grease

compositions having high traction coefficient
 INVENTOR(S): Nakanishi, Hiroshi; Umemoto, Noboru; Nakamura,
 Yoshinobu

PATENT ASSIGNEE(S): Tonen Corp, Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 09013068	A	19970114	JP 1995-187785	199506 30

<--

PRIORITY APPLN. INFO.: JP 1995-187785

199506
30

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AB In the compns., thickeners are dispersed in base oils of (a)
 hydrogenated cyclopentadiene oligomers having weight-average mol. weight
 200-300, and/or (b) polybutene having viscosity 5-1000 cSt at
 40°. The compns. have improved fluidity and low low-temperature
 viscosity.

IT 187723-54-2

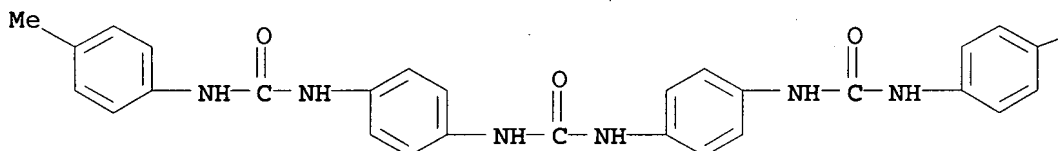
RL: MOA (Modifier or additive use); USES (Uses)

(thickeners; **lubricating grease** compns.
having high traction coefficient)

RN 187723-54-2 HCAPLUS

CN Urea, N,N'-bis[4-[[[(4-methylphenyl)amino]carbonyl]amino]phenyl]-
(9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B

Me

IC ICM C10M169-02
ICS C10M105-04; C10M107-08; C10M169-02; C10M115-08; C10N020-02;
C10N020-04; C10N030-02; C10N040-04; C10N050-10
CC 51-8 (Fossil Fuels, Derivatives, and Related Products)
ST **lubricating grease** base oil traction coeff;
hydrogenated cyclopentadiene oligomer **lubricating
grease**; polybutene **lubricating grease**
base oil
IT **Lubricating greases**
(**lubricating grease** compns. having high
traction coefficient)
IT **Lubricating grease** additives
(thickeners; **lubricating grease** compns.
having high traction coefficient)
IT 9003-29-6, LV 50
RL: TEM (Technical or engineered material use); USES (Uses)
(base oil component, LV 25; **lubricating grease**
compns. having high traction coefficient)
IT 26779-34-0D, Cyclopentadiene trimer, hydrogenated 54405-19-5D,
hydrogenated
RL: TEM (Technical or engineered material use); USES (Uses)
(base oil component; **lubricating grease**
compns. having high traction coefficient)
IT 25568-84-7D, Cyclopentadiene homopolymer, hydrogenated
RL: TEM (Technical or engineered material use); USES (Uses)
(oligomeric, base oil component; **lubricating
grease** compns. having high traction coefficient)
IT 1340-69-8, Bentone 34 100408-54-6 187723-54-2
RL: MOA (Modifier or additive use); USES (Uses)
(thickeners; **lubricating grease** compns.
having high traction coefficient)

L52 ANSWER 4 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1994:275220 HCAPLUS

DOCUMENT NUMBER: 120:275220

TITLE: Urea-series grease compositions

INVENTOR(S): Ozaki, Koyo; Tanaka, Keiji; Tsucha, Tetsuo

PATENT ASSIGNEE(S): Showa Shell Sekiyu, Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 06017080	A	19940125	JP 1992-194946	19920629
JP 2864473	B2	19990303	JP 1992-194946	19920629

PRIORITY APPLN. INFO.: <--

OTHER SOURCE(S): MARPAT 120:275220

AB Urea-series grease compns. comprise 2-20 weight% thickeners of (a) diureas having the general formula $R_1NHCONHR_2NHCONHR_3$ (R_2 = tolylene group, R_1 and R_3 = C16-18 straight or branched saturated or unsatd. alkyl groups) and (b) diureas having the general formula $R_4NHCONHR_5NHCONHR_6$ (R_5 = diphenylmethane group, R_4 and R_6 = C8 straight or branched saturated alkyl groups) at (a)-(b) 20-90:1 mol ratio, in mineral oils and/or synthetic oils as the base oil.

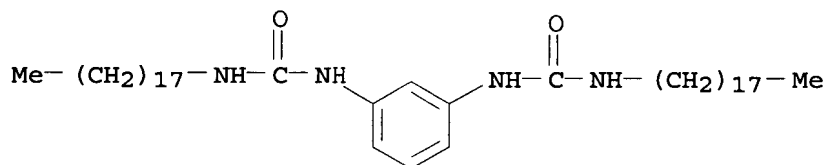
IT 28805-02-9

RL: USES (Uses)

(thickeners containing diurea mixts. of, for lubricating greases)

RN 28805-02-9 HCAPLUS

CN Urea, N,N'-(methyl-1,3-phenylene)bis[N'-octadecyl- (9CI) (CA INDEX NAME)



D1-Me

IC ICM C10M169-02

ICI C10M169-02, C10M101-02, C10M105-02, C10M115-08; C10N030-00, C10N030-02, C10N030-06, C10N040-02, C10N050-10

CC 51-8 (Fossil Fuels, Derivatives, and Related Products)

ST diurea thickener grease lubricating

IT Lubricating grease additives
 (thickeners, diurea mixts.)

IT 28805-02-9 122886-55-9

RL: USES (Uses)

(thickeners containing diurea mixts. of, for lubricating greases)

L52 ANSWER 5 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1994:222227 HCAPLUS

DOCUMENT NUMBER: 120:222227

TITLE: **Lubricating greases** for
sintered bearings

INVENTOR(S): Sato, Tasuku; Mori, Natsuhiko; Suzuki, Tatsuya

PATENT ASSIGNEE(S): Ntn Toyo Bearing Co Ltd, Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 05255685	A	19931005	JP 1992-52412	199203 11

PRIORITY APPLN. INFO.:

JP 1992-52412

199203
11

AB The title greases comprise a mixed base oil containing (20-80):(20-80) weight ratio of alkyl di-Ph ethers and α -olefin polymers, and 0.1-5 weight% of a thickener containing aliphatic urea compound. Thus, a mixed base oil containing 50:50 weight ratio of Moresco-Hilube BS-100 (an alkyl di-Ph ether) and HC-10 (an α -olefin polymer) and having kinematic viscosity 70 cSt at 40° was thickened with 1 weight% of an aliphatic urea (prepared from isocyanate and stearylamine) to form a highly durable **lubricating grease** with high thermal stability at 120° for ≥ 1100 h.

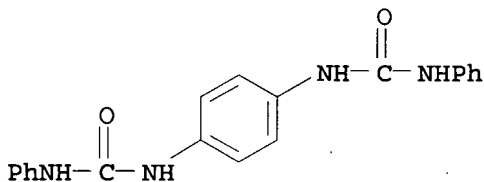
IT 13140-80-2

RL: USES (Uses)

(thickener, **lubricating greases** containing, for
sintered bearings)

RN 13140-80-2 HCAPLUS

CN Urea, N,N''-1,4-phenylenebis[N'-phenyl- (9CI) (CA INDEX NAME)



IC ICM C10M169-02

ICS F16C017-02; F16C033-10

ICI C10M169-02, C10M105-18, C10M105-04, C10M133-20; C10N030-06,
C10N030-08, C10N040-02

CC 51-8 (Fossil Fuels, Derivatives, and Related Products)

ST **lubricating grease** sintered bearing urea; urea
thickener **lubricating grease** bearingIT **Lubricating greases**

(base oils, alkyl di-Ph ethers containing, for sintered bearings)

IT **Lubricating grease additives**
(thickeners, urea compds., for sintered bearings)

IT Alkenes, polymers
RL: USES (Uses)
(α -, polymers, mixed base containing, for **lubricating greases** for sintered bearings)

IT 9010-79-1 143179-68-4, Anderol 456 154281-08-0, Moresco-Hilube
BS 100 154281-22-8, Reolube LPE 602
RL: USES (Uses)
(mixed base oil containing, for **lubricating greases** for sintered bearings)

IT 62-53-3D, Aniline, reaction products with isocyanates 108-91-8D,
Cyclohexylamine, reaction products with isocyanates 124-30-1D,
Stearylamine, reaction products with isocyanates **13140-80-2**
153788-23-9
RL: USES (Uses)
(thickener, **lubricating greases** containing, for sintered bearings)

L52 ANSWER 6 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1992:452228 HCAPLUS
DOCUMENT NUMBER: 117:52228
TITLE: Manufacture of urea grease compositions for reduced squeaky noise from bearings
INVENTOR(S): Takemura, Kunio; Saito, Takashi
PATENT ASSIGNEE(S): Nippon Koyu Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 11 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 03231993	A	19911015	JP 1990-27221	19900208
			<--	
JP 07047753	B	19950524	JP 1990-27221	19900208

PRIORITY APPLN. INFO.: <--

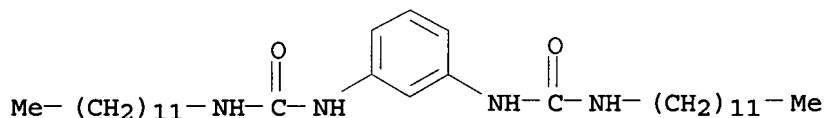
OTHER SOURCE(S): MARPAT 117:52228

AB The title compns. are manufactured by heating 70-98% base oil with 2-30% of urea compds. R1NHCONHR2NHCONHR3 (R1, R3 = C8-18 saturated alkyl; R2 = tolylene, C6H4CH2C6H4, dimethylbiphenylene) at 170-230° and cooling the mixture at ≥ 5 °C/s. The compns. show excellent thermal stability.

IT **133946-87-9**
RL: USES (Uses)
(thickener containing, for **lubricating greases**, for reduced squeaky noise from bearings)

RN 133946-87-9 HCAPLUS

CN Urea, N,N''-(methyl-1,3-phenylene)bis[N'-dodecyl- (9CI) (CA INDEX NAME)



D1-Me

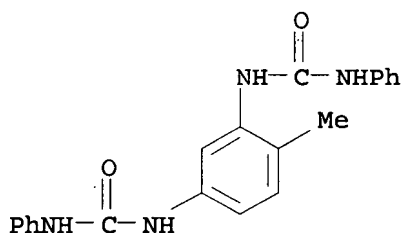
IC ICM C10M115-08
 ICI C10N030-00, C10N050-10, C10N070-00
 CC 51-8 (Fossil Fuels, Derivatives, and Related Products)
 ST bearing grease urea sound redn; thickener diurea **lubricating grease** bearing
 IT **Lubricating grease** additives
 (thickeners, diurea compds., for bearings)
 IT 91-97-4D, reaction products with alkylamines 101-68-8D, MDI, reaction products with alkylamines 111-86-4D, Octylamine, reaction products with diisocyanates 124-22-1D, Dodecylamine, reaction products with diisocyanates 124-30-1D, Octadecylamine, reaction products with diisocyanates 584-84-9D, 2,4-TDI, reaction products with alkylamines 2016-42-4D, Tetradecylamine, reaction products with diisocyanates 3378-63-0D, 3,5,5-Trimethylhexylamine, reaction products with diisocyanates 43136-14-7 103522-96-9 128666-17-1 133946-87-9 138804-83-8 138804-84-9 138804-85-0 138804-86-1
 RL: USES (Uses)
 (thickener containing, for **lubricating greases** , for reduced squeaky noise from bearings)

L52 ANSWER 7 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 1991:562610 HCAPLUS
 DOCUMENT NUMBER: 115:162610
 TITLE: A study of greases based on polyureas
 AUTHOR(S): Xie, Liangsen; Li, Hui
 CORPORATE SOURCE: Yiping Chem. Works, SINOPEC, Chungking, Peop. Rep. China
 SOURCE: Synthetic Lubrication (1991), 8(1), 39-50
 CODEN: SYLUEB; ISSN: 0265-6582
 DOCUMENT TYPE: Journal
 LANGUAGE: English

AB The effects of polyurea structures (diureas and tetraureas) and oil type (mineral, synthetic hydrocarbons, esters, polyoxyalkylenes) were studied on the characteristics of polyurea-thickened **lubricating greases**. The impacts of monoamines, diamines, and diisocyanates (chiefly TDI) used for polyurea synthesis on grease characteristics were also studied. In general, polyurea-thickened greases prepared from a variety of synthetic and mineral oils have high drop point, outstanding water resistance, high oxidation stability, and prolonged bearing life.

IT 60903-54-0
 RL: USES (Uses)
 (**lubricating greases** thickened with, characteristics of)

RN 60903-54-0 HCAPLUS
 CN Urea, N,N''-(4-methyl-1,3-phenylene)bis[N'-phenyl- (9CI) (CA INDEX NAME)



- CC 51-8 (Fossil Fuels, Derivatives, and Related Products)
Section cross-reference(s): 38
- ST **lubricating grease** polyurea property; dropping
point **lubricating grease** polyurea; thickener
lubricating grease polyurea
- IT Polyureas
RL: USES (Uses)
(**lubricating greases** thickened with,
characteristics of)
- IT **Lubricating greases**
(polyurea-thickened, properties of, effects of thickeners and
base oils on)
- IT Siloxanes and Silicones, uses and miscellaneous
RL: USES (Uses)
(Me Ph, polyurea-thickened **lubricating greases**
containing, characteristics of, effect of thickener and oil
properties on)
- IT Siloxanes and Silicones, uses and miscellaneous
RL: USES (Uses)
(di-Me, polyurea-thickened **lubricating greases**
containing, characteristics of, effect of thickener and oil
properties on)
- IT Siloxanes and Silicones, uses and miscellaneous
RL: USES (Uses)
(di-Ph, polyurea-thickened **lubricating greases**
containing, characteristics of, effect of thickener and oil
properties on)
- IT **Lubricating grease** additives
(thickeners, polyureas, properties of, effect of mol. structure
on)
- IT 60903-54-0 67144-13-2 129856-30-0
136494-40-1
RL: USES (Uses)
(**lubricating greases** thickened with,
characteristics of)
- IT 71-43-2D, Benzene, alkyl derivs. 77-99-6D, Trimethylolpropane,
esters 111-20-6D, Decanedioic acid, esters 115-77-5D, esters
126-58-9D, Dipentaerythritol, esters 25322-69-4D, Polypropylene
glycol, esters
RL: USES (Uses)
(polyurea-thickened **lubricating greases**
containing, characteristics of, effect of thickener and oil
properties on)

L52 ANSWER 8 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1991:231900 HCAPLUS

DOCUMENT NUMBER: 114:231900

TITLE: Diurea grease composition

INVENTOR(S): Kinoshita, Hirotugu; Sekiya, Makoto; Mishima,

PATENT ASSIGNEE(S): Masaru
 SOURCE: Nippon Oil Co., Ltd., Japan
 Eur. Pat. Appl., 18 pp.
 CODEN: EPXXDW
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 406894	A1	19910109	EP 1990-112952	19900706
EP 406894	B1	19931222	<--	
R: DE, FR, GB				
JP 03128993	A	19910531	JP 1990-155338	19900615
JP 2777928	B2	19980723	<--	
US 5145591	A	19920908	US 1990-547880	19900703
PRIORITY APPLN. INFO.:			JP 1989-174084	A 19890707
			JP 1990-155338	A 19900615

OTHER SOURCE(S): MARPAT 114:231900

AB A diurea grease composition contain a base oil and 2-25 weight% of a diurea compound. The diurea grease compound is prepared by reacting a mixed system of ≥ 2 different diisocyanates of the formula OCNRNCO (R is a straight-chained or branched alkylene or alkenylene group, a cycloalkylene or an aromatic group) with an amine compound of a primary amine of the formula RNH_2 (R = C6-20 hydrocarbyl), a secondary amine of the formula $\text{R}_2\text{R}_3\text{NH}$ (R2 and R3 are C6-20 hydrocarbyl groups), or their mixts.

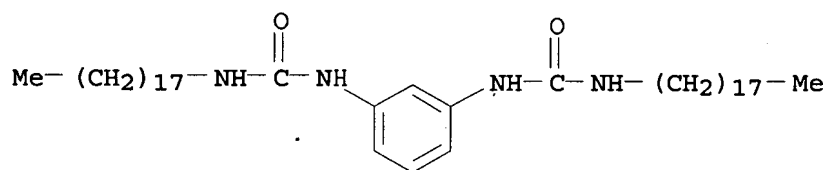
IT 28805-02-9

RL: USES (Uses)

(preparation of diureas containing, thickeners, for lubricating greases)

RN 28805-02-9 HCAPLUS

CN Urea, N,N'-(methyl-1,3-phenylene)bis[N'-octadecyl- (9CI) (CA INDEX NAME)

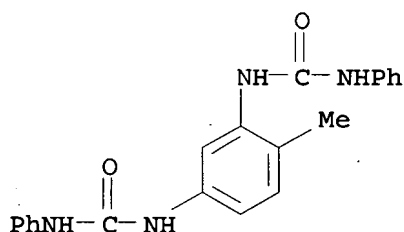


D1-Me

IC ICM C10M115-08
 ICI C10N050-10
 CC 51-8 (Fossil Fuels, Derivatives, and Related Products)
 ST **lubricating grease** diurea compn; amine
 diisocyanate diurea **lubricating grease**
 IT Amines, compounds
 RL: USES (Uses)
 (reaction products, with diisocyanates, for diurea thickeners,
 for **lubricating greases**)
 IT **Lubricating grease** additives
 (thickeners, diureas, from diisocyanates and amines, preparation of)
 IT 91-97-4D, reaction products with diisocyanates and cyclohexylamine
 98-94-2D, reaction products with MDI, tolylene, diisocyanate,
 eicosylamine and dicyclohexylamine 100-60-7D,
 Methylcyclohexylamine, reaction products with diisocyanates and
 amines 101-68-8D, reaction products with tolylene diisocyanate and
 amines 101-83-7D, Dicyclohexylamine, reaction products with MDI,
 tolylene, diisocyanate, octadecylamine, and cyclohexylamine
 106-49-0D, p-Toluidine, reaction products with MDI, tolylene
 diisocyanate and octadecylamine 108-91-8D, Cyclohexanamine,
 reaction products with octadecylamine, dicyclohexylamine, MDI, and
 tolylene diisocyanate 111-86-4D, Octylamine, reaction products
 with diisocyanates and amines 124-22-1D, Laurylamine, reaction
 products with diisocyanates and amines 124-30-1D, Octadecylamine,
 reaction products with MDI, tolylene diisocyanate, cyclohexylamine,
 and dicyclohexylamine 822-06-0D, reaction products with
 dimethyldiphenyl diisocyanate and cyclohexylamine 2778-42-9D,
 reaction products with dimethyldiphenyl diisocyanate and
 cyclohexylamine 3634-83-1D, reaction products with MDI and
 cyclohexylamine 4098-71-9D, reaction products with MDI and
 cyclohexylamine 10525-37-8D, Eicosylamine, reaction products with
 MDI, tolylene, diisocyanate, dimethylcyclohexylamine, and
 dicyclohexylamine 26471-62-5D, Tolylene diisocyanate, reaction
 products with MDI and amines **28805-02-9** 43136-14-7
 58890-25-8 **103479-09-0** 103522-96-9 **117617-72-8**
122870-29-5 122886-55-9 127067-58-7 127194-10-9
133176-45-1 133176-46-2 133176-47-3 133176-48-4
 133336-91-1 133336-92-2 133336-93-3 133336-94-4
133946-87-9 133946-88-0 133946-89-1
 RL: USES (Uses)
 (preparation of diureas containing, thickeners, for **lubricating greases**)

L52 ANSWER 9 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 1991:210183 HCAPLUS
 DOCUMENT NUMBER: 114:210183
 TITLE: A study of the greases based on polyureas

AUTHOR(S): Xie, Liangsen; Li, Hui
 CORPORATE SOURCE: Yiping Chem. Works, SINOPEC, Chongqing, Peop.
 Rep. China
 SOURCE: Proc. Conf. Synth. Lubr. (1989),
 500-12. Editor(s): Zakar, Andras. Hung.
 Hydrocarbon Inst.: Szazhalombatta, Hung.
 CODEN: 56TUAO
 DOCUMENT TYPE: Conference
 LANGUAGE: English
 AB Excellent greases were prepared from a variety of base oils thickened
 with urea compds. with different structures. Polyurea greases have
 high dropping point, prolonged bearing life, and excellent water
 resistance, oxidation stability, and colloidal stability. Three
 polyurea greases were developed and successfully applied.
 IT 60903-54-0
 RL: USES (Uses)
 (thickener, for lubricating greases)
 RN 60903-54-0 HCAPLUS
 CN Urea, N,N'-(4-methyl-1,3-phenylene)bis[N'-phenyl- (9CI) (CA INDEX
 NAME)



CC 51-8 (Fossil Fuels, Derivatives, and Related Products)
 ST lubricating grease polyurea thickener
 IT Esters, uses and miscellaneous
 Hydrocarbons, uses and miscellaneous
 Siloxanes and Silicones, uses and miscellaneous
 RL: USES (Uses)
 (lubricating grease performance in presence
 of, effect of polyurea thickeners on)
 IT Polyureas
 RL: USES (Uses)
 (lubricating grease thickeners)
 IT Lubricating greases
 (polyurea-thickened, with high dropping points and oxidation and
 colloidal stability)
 IT Lubricating grease additives
 (thickeners, polyureas)
 IT 101-68-8P 584-84-9P 822-06-0P
 RL: PREP (Preparation)
 (preparation of, for preparation of lubricating grease
 thickeners)
 IT 60903-54-0 67144-13-2 129856-30-0
 129856-31-1 129856-32-2 129856-33-3
 129856-34-4 129856-35-5 129856-36-6
 129856-37-7 129856-38-8 129856-39-9
 129856-40-2 129856-41-3 129856-42-4
 129856-43-5 129856-44-6 129856-45-7
 129856-46-8 129856-47-9 129856-48-0
 129856-49-1 129856-50-4 129856-51-5

129877-94-7 129877-96-9 129877-97-0
 RL: USES (Uses)
 (thickener, for lubricating greases)

L52 ANSWER 10 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 1990:481954 HCAPLUS
 DOCUMENT NUMBER: 113:81954
 TITLE: Diurea thickeners and grease compositions with improved acoustic characteristics
 INVENTOR(S): Ozaki, Koyo; Shimakawa, Yasuo; Tanaka, Keiji; Naka, Michiharu; Koizumi, Hideki; Suzuki, Toshiro
 PATENT ASSIGNEE(S): Showa Shell Sekiyu K. K., Japan; Nippon Seiko K. K.
 SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

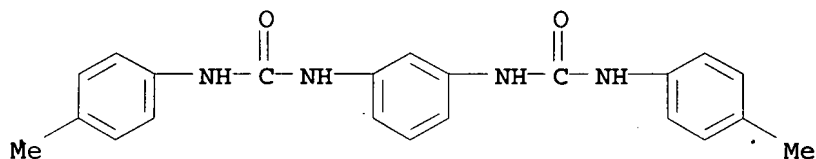
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 02077494	A	19900316	JP 1988-228493	19880914
JP 2546707	B2	19961023	JP 1988-228493	19880914

PRIORITY APPLN. INFO.: <--

AB Mineral or synthetic oil grease compns. contain, as thickeners, 2-30% diurea mixts. comprising (A) 20-90 mol% R1NHCONHR2NHCONHR3 [I; R1, R3 = C18 (un)saturated alkyl; R2 = bitolylene], (B) 20-90 mol% R4NHCONHC6H4CH2C6H4NHCONHR5 (R4, R5 = C8 saturated alkyl), and optionally (C) 5-90 parts (per 100 parts A + B) I [R1, R3 = alkaryl, haloaryl; R2 = (bi)tolylene]. The compns. have good thermal and mech. stability. Thus, a solution of 6.56 g 3,3'-bitolylene-4,4'-diisocyanate in mineral oil was treated with 13.22 g stearylamine for 10 min, then 2.08 g MDI was added followed by 2.14 g octylamine, and the mixture was kneaded to give a grease (containing 12% thickener) with consistency 268, dropping point 248°, and good acoustic properties, vs. 273, 258, and poor, resp., for the composition prepared without MDI and octylamine.

IT 122870-29-5
 RL: USES (Uses)
 (thickener, for lubricating greases, for improved acoustic characteristics)

RN 122870-29-5 HCAPLUS
 CN Urea, N,N'-(methyl-1,3-phenylene)bis[N'-(4-methylphenyl)- (9CI)
 (CA INDEX NAME)



D1-Me

IC ICM C10M115-08
 ICI C10N030-00, C10N040-02, C10N050-10
 CC 51-8 (Fossil Fuels, Derivatives, and Related Products)
 ST urea thickener grease acoustic property; **lubricating grease** diurea thickener
 IT **Lubricating grease** additives
 (thickeners, diurea mixts., with good acoustic characteristics)
 IT **122870-29-5 122870-30-8 122870-36-4**
 122886-55-9 122886-56-0 122886-57-1 122886-58-2 128666-17-1
 128666-18-2
 RL: USES (Uses)
 (thickener, for **lubricating greases**, for improved acoustic characteristics)

L52 ANSWER 11 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 1989:537387 HCAPLUS
 DOCUMENT NUMBER: 111:137387
 TITLE: Urea grease compositions
 INVENTOR(S): Ozaki, Koyo; Shimakawa, Yasuo; Tanaka, Keiji
 PATENT ASSIGNEE(S): Showa Shell Sekiyu K. K., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 01139696	A	19890601	JP 1987-296141	19871126
JP 06092592	B	19941116	JP 1987-296141	19871126

PRIORITY APPLN. INFO.: <--

OTHER SOURCE(S): MARPAT 111:137387
 AB Mineral or synthetic oil grease contains, as thickener, 2-30% diurea mixts. comprising 10-95 mol% R1NHCONHC6H4CH2C6H4NHCONHR2 (R1, R2 = C8 saturated alkyl) and 5-90 mol% R3NHCONHR4NHCONHR5 (R3, R5 = alkaryl, haloaryl; R4 = tolylene, bitolylene). The compns. have high dropping point, excellent heat resistance, and good acoustic characteristics. Thus, 2.57 g p-toluidine was added to a mixture of 3.16 g 3,3'-bitolylene-4,4'-diisocyanate and mineral oil at 80°, then 8.98 g MDI was added followed by 9.29 g octylamine,

and the mixture was kneaded to give a grease (containing 12% thickener) with consistency (at 25°) 270 and dropping point >260°, vs., 265 and 221°, resp., for grease prepared from MDI and octylamine.

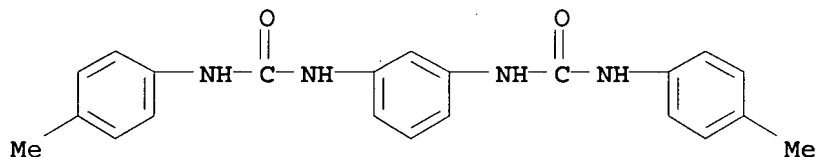
IT 122870-29-5

RL: USES (Uses)

(thickener containing, for lubricating greases)

RN 122870-29-5 HCAPLUS

CN Urea, N,N''-(methyl-1,3-phenylene)bis[N'-(4-methylphenyl)]- (9CI)
(CA INDEX NAME)



D1-Me

IC ICM C10M115-08

ICS C10M169-02

ICI C10M169-02, C10M115-08, C10M107-10, C10M107-02; C10N020-02, C10N030-00, C10N050-10

CC 51-8 (Fossil Fuels, Derivatives, and Related Products)

ST lubricating grease thickener urea mixt

IT Lubricating grease additives

(thickeners, diurea mixts.)

IT 122870-29-5 122870-30-8 122870-36-4

122886-55-9 122886-56-0 122886-57-1 122886-58-2

RL: USES (Uses)

(thickener containing, for lubricating greases)

L52 ANSWER 12 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1989:518009 HCAPLUS

DOCUMENT NUMBER: 111:118009

TITLE: Lubricating grease
composition

INVENTOR(S): Kageyama, Hachiro; Moriuchi, Tsutomu; Kimura, Hiroshi; Endo, Toshiaki

PATENT ASSIGNEE(S): Kyodo Oils and Fats Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 12 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 63312397	A	19881220	JP 1987-147888	19870616

PRIORITY APPLN. INFO.:

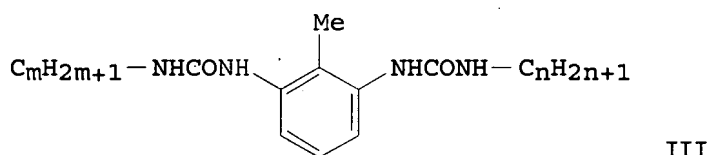
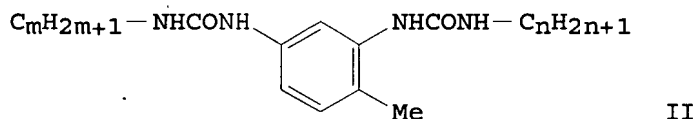
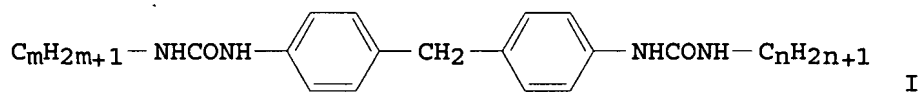
JP 1987-147888

198706

16

OTHER SOURCE(S): MARPAT 111:118009
GI

<--



AB Thickeners for lubricating greases used in gears or elec. generator bearings, present at 1-10 weight% concentration, contain urea compds. having the following formulas I ($\text{C}_m\text{H}_{2m+1}$ and $\text{C}_n\text{H}_{2n+1}$ are independently straight-chain alkyl groups; m and n are an integer of 6-20, but $m+n=19-40$), II or III ($\text{C}_m\text{H}_{2m+1}$ and $\text{C}_n\text{H}_{2n+1}$ are defined as above). Thus, a polyester base oil (kinematic viscosity 30 cSt at 40°) was thickened with 3.0 weight% of an urea compound (prepared by reacting stearylamine with MDI) to form a lubricating grease, which was then subjected to the 4-ball friction test, resulting in a wear scar of 0.70 mm, vs. 1.26 mm for a com. grease.

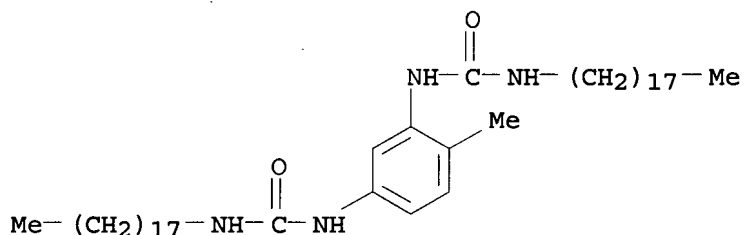
IT 67144-13-2P

RL: PREP (Preparation)

(preparation of, thickener, for lubricating greases
, for gears)

RN 67144-13-2 HCAPLUS

CN Urea, N,N'-(4-methyl-1,3-phenylene)bis[N'-octadecyl- (9CI) (CA
INDEX NAME)



IC ICM C10M115-08

ICS C10M177-00

ICI C10N040-02, C10N050-10

CC 51-8 (Fossil Fuels, Derivatives, and Related Products)

ST **lubricating grease** thickener urea compd;
isocyanate urea gear **lubricating grease**

IT **Lubricating grease** additives
(thickeners, urea compds., for gears)

IT 43136-14-7P 67144-13-2P 103522-96-9P
117328-80-0P 117328-85-5P 117328-87-7P
RL: PREP (Preparation)
(preparation of, thickener, for **lubricating greases**
, for gears)

IT 101-68-8D, MDI, reaction products with C6-20 monoamines 106-49-0D,
reaction products with diisocyanates 124-30-1D, Stearylamine,
reaction products with diisocyanates 2016-42-4D, Tetradecylamine,
reaction products with diisocyanates 26471-62-5D, TDI, reaction
products with C6-20 monoamines
RL: USES (Uses)
(thickeners, for **lubricating greases**, for
gears)

L52 ANSWER 13 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1988:633979 HCAPLUS

DOCUMENT NUMBER: 109:233979

TITLE: Urea-urethane **lubricating grease** composition

INVENTOR(S): Kinoshita, Hirotosugo; Sekiya, Makoto; Mishima, Masaru

PATENT ASSIGNEE(S): Nippon Oil Co., Ltd., Japan

SOURCE: Eur. Pat. Appl., 10 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

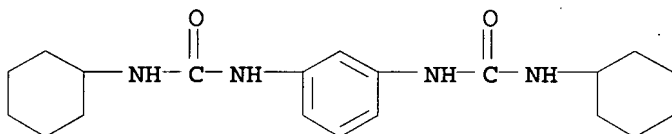
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 274756	A2	19880720	EP 1987-119400	19871230
<--				
EP 274756	A3	19881026		
EP 274756	B1	19901031		
R: DE, FR, GB				
JP 01009296	A	19890112	JP 1987-321491	19871221
<--				
JP 06004863	B	19940119		
US 4915860	A	19900410	US 1989-328786	19890323
<--				
PRIORITY APPLN. INFO.:				
				JP 1987-1763
				A
				19870109
<--				
				US 1988-141401
				B1
				19880104
<--				

OTHER SOURCE(S): CASREACT 109:233979; MARPAT 109:233979

AB **Lubricating grease** thickener, present at 2-25 weight% concentration, contains a mixture of diurea compound of the general formula (R₂NHCONH)2R₁ (I) 20-99, urea-urethane compound of the general formula R₂NHCONHR₁NHCOOR₃ (II) 4-30, and diurethane compound of the general formula (R₃OOCNH)2R₁ (III) 1-50 mol%, wherein R₁ = difunctional aromatic hydrocarbon residue, R₂ = cyclohexyl or C7-12 cyclohexyl-derived group, R₃ = C8-20-alkyl or alkenyl group, the ratio of the number of amino groups to alkoxy groups in the mixture being 40-95:5-60. Thus, a grease composition containing 11 weight% of a urea-urethane mixture as a thickener comprising I (R₁ = MeC₆H₃, R₂ = cyclohexyl) 60, II (R₂ = cyclohexyl, R₃ = C₁₈H₃₇, R₁ = MeC₆H₃ 20, and III (R₃ = C₁₈H₃₇, R₁ = MeC₆H₃) 20 mol% (70:30 cyclohexylamino-octadecyloxy ratio) was subjected to the consistency, dropping point, and oil separation tests (JIS K 2220 5.3, 5.4, and 5.7 Methods), resulting in improved performance.

IT **117617-72-8**
 RL: USES (Uses)
 (thickeners containing, for **lubricating greases**)

RN 117617-72-8 HCAPLUS
 CN Urea, N,N'-(methyl-1,3-phenylene)bis[N'-cyclohexyl- (9CI) (CA INDEX NAME)



D1-Me

IC ICM C10M115-08
 ICI C10M115-08
 CC 51-8 (Fossil Fuels, Derivatives, and Related Products)
 ST **lubricating grease** thickness urea urethane
 IT **Lubricating grease** additives
 (thickeners, urea-urethane mixts.)
 IT 28805-04-1 58890-25-8 84510-19-0 117617-71-7
 117617-72-8 117702-99-5 117703-00-1 117703-01-2
 117703-02-3
 RL: USES (Uses)
 (thickeners containing, for **lubricating greases**)

L52 ANSWER 14 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1988:613445 HCAPLUS

DOCUMENT NUMBER: 109:213445

TITLE: **Lubricating grease**
composition

INVENTOR(S): Nakanishi, Yukio; Kimura, Hiroshi; Suda, Mitsutaka

PATENT ASSIGNEE(S): Kyodo Oils and Fats Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 63179998	A	19880723	JP 1987-11365	19870122

PRIORITY APPLN. INFO.: JP 1987-11365 19870122

OTHER SOURCE(S): MARPAT 109:213445

AB **Lubricating greases** for mech. parts are prepared by thickening a base oil with 1-30 weight% of an urea compound having the structural formula R2UR1UR2 (U is the NHCONH group; R1 is an isocyanate residual group, alkyl, aryl or its derivs.; R2 is a monoamine residual group, alkyl, aryl, cycloalkyl or its derivs.). Thus, a polyolefin base oil was blended with 20.0 weight% a thickener (prepared by reacting TDI with hexylamine) to give a **lubricating grease**, which was then subjected to the four-ball friction test (JIS K 2220), resulting in a wear scar of 0.15 μ m, vs. 0.74 μ m for a com. grease.

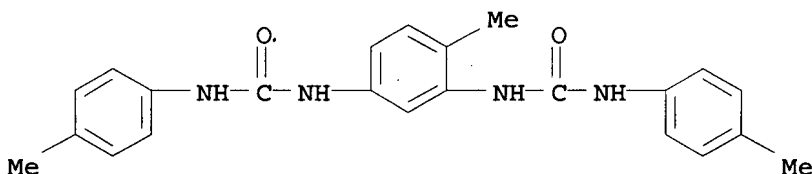
IT 54390-87-3P

RL: PREP (Preparation)

(preparation of, thickener, for **lubricating greases**, for mech. parts)

RN 54390-87-3 HCAPLUS

CN Urea, N,N''-(4-methyl-1,3-phenylene)bis[N'-(4-methylphenyl)- (9CI)
(CA INDEX NAME)



IC ICM C10M115-08

ICS C10M119-24

ICA C10M177-00

ICI C10N050-10, C10N070-00

CC 51-8 (Fossil Fuels, Derivatives, and Related Products)

ST **lubricating grease** thickener urea compd;
hexylamine TDI urea thickener grease

IT **Lubricating grease** additives

(thickeners, urea compds. as, for mech. parts)

IT 13140-83-5P 54390-87-3P 60903-54-0P

61657-50-9P 103522-96-9P 117328-81-1P

117609-59-3P

RL: PREP (Preparation)

(preparation of, thickener, for **lubricating greases**, for mech. parts)

IT 62-53-3D, Aniline, reaction products with isocyanate compds.

101-68-8D, reaction products with alkyl- or arylamines 106-49-0D,

p-Toluidine, reaction products with isocyanate compds. 111-26-2D,

Hexylamine, reaction products with isocyanate compds. 124-22-1D,

Dodecylamine, reaction products with isocyanate compds.
 26471-62-5D, TDI, reaction products with alkyl- or arylamines
 RL: USES (Uses)
 (thickener, for lubricating greases)

L52 ANSWER 15 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1988:593588 HCAPLUS

DOCUMENT NUMBER: 109:193588

TITLE: **Lubricating grease**
 compositions

INVENTOR(S): Kageyama, Hachiro; Moriuchi, Tsutomu; Endo, Toshiaki

PATENT ASSIGNEE(S): Kyodo Oils and Fats Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

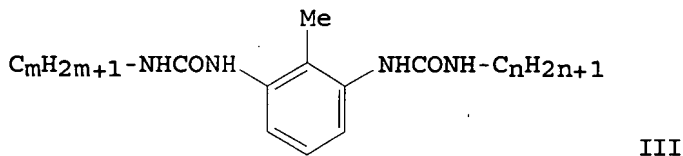
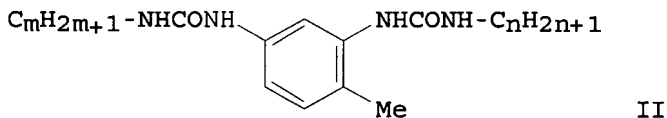
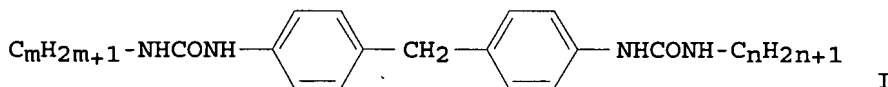
LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 63162790	A	19880706	JP 1986-308906	198612 26
			<-- JP 1986-308906	198612 26

OTHER SOURCE(S): MARPAT 109:193588
 GI



AB **Lubricating greases** especially useful for reducing squeaky noise from small-diameter bearings are prepared by homogenizing a base oil with 5-40 weight% of a thickener containing urea compound having the structural formula I ($\text{C}_m\text{H}_{2m+1}$ and $\text{C}_n\text{H}_{2n+1}$ are straight-chain alkyl groups, but $m + n$ is 19-40), II or III ($\text{C}_m\text{H}_{2m+1}$ and $\text{C}_n\text{H}_{2n+1}$ are

straight-chain alkyl groups, but $m + n$ is 16-40). The urea compound is preferably prepared by reacting an isocyanate (e.g., MDI or TDI) with a C6-20 fatty amine. Thus, an ester base oil was homogenized with 15 weight% of an urea compound thickener (prepared by reacting MDI with n-octadecylamine and n-octylamine) to form a **lubricating grease** with dropping point 200°, vs. 283° for a conventional grease.

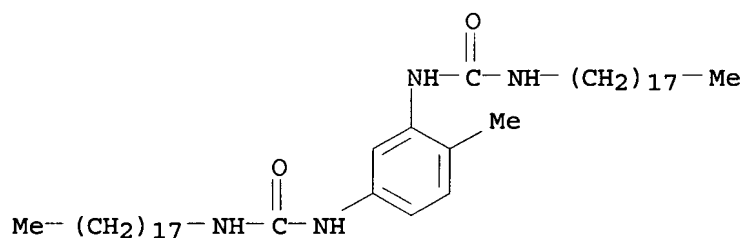
IT 67144-13-2P

RL: PREP (Preparation)

(preparation of, thickener, for **lubricating greases**, for reducing squeaky noise from small-diameter bearings)

RN 67144-13-2 HCAPLUS

CN Urea, N,N'-(4-methyl-1,3-phenylene)bis[N'-octadecyl- (9CI) (CA INDEX NAME)



IC ICM C10M115-08

ICS C10M119-24

ICI C10N040-02, C10N050-10

CC 51-8 (Fossil Fuels, Derivatives, and Related Products)

ST **lubricating grease** squeaky noise axle; diurea thickener grease TDI alkylamine

IT **Lubricating grease** additives

(thickeners, urea compds. as, for reducing squeaky noise from small-diameter bearings)

IT 43136-14-7P 67144-13-2P 103522-96-9P

117328-80-0P 117328-81-1P 117328-82-2P

117328-83-3P 117328-84-4P 117328-85-5P

117328-86-6P 117328-87-7P

RL: PREP (Preparation)

(preparation of, thickener, for **lubricating greases**

, for reducing squeaky noise from small-diameter bearings)

IT 101-68-8D, reaction products with C6-20 fatty amines 111-86-4D,

n-Octylamine, reaction products with isocyanates 124-30-1D,

n-Octadecylamine, reaction products with isocyanates 26471-62-5D,

TDI, reaction products with C6-20 fatty amines

RL: USES (Uses)

(thickener, for **lubricating greases**, for

reducing squeaky noise from small-diameter bearings)

L52 ANSWER 16 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1981:606551 HCAPLUS

DOCUMENT NUMBER: 95:206551

TITLE: **Lubricating greases**

PATENT ASSIGNEE(S): Mitsui Toatsu Chemicals, Inc., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 56093799	A	19810729	JP 1979-170441	19791228
JP 61021515	B	19860527	JP 1979-170441	19791228

PRIORITY APPLN. INFO.: <--

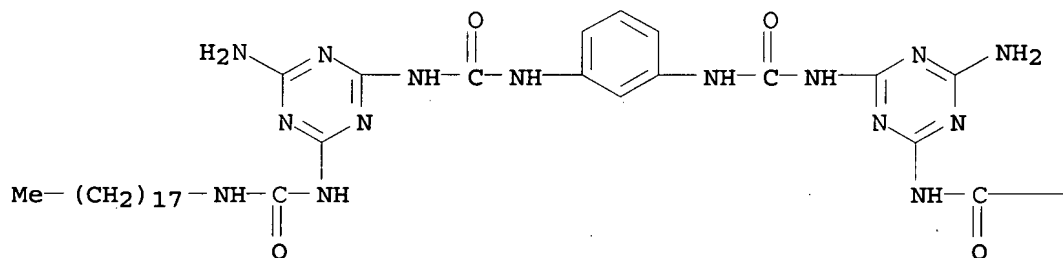
AB **Lubricating greases** containing s-triazine-polyureanized compds. are manufactured by treating a ureidomelamine with a diisocyanate in a base oil. Thus, a mixture containing Number 500 neutral oil 50, octadecylureidomelamine [20103-66-6] 6.2, and tolylene diisocyanate [26471-62-5] 1.25 g was heated to 152° to give a grease having a consistency (JIS K 2560) of 174 and a pour point of ≥200°.

IT **79800-72-9P**
 RL: PREP (Preparation)
 (manufacture of, as thickener for **lubricating greases**)

RN 79800-72-9 HCAPLUS

CN Urea, N,N''-(methyl-1,3-phenylene)bis[N'-(4-amino-6-[[[(octadecylamino)carbonyl]amino]-1,3,5-triazin-2-yl])-(9CI) (CA INDEX NAME)

PAGE 1-A



D1-Me

PAGE 1-B

—NH—(CH₂)₁₇—Me

IC C10M005-20

MHuang REM4B31 571-272-3952

04/06/2007

CC 51-7 (Fossil Fuels, Derivatives, and Related Products)
 ST **lubricating grease** thickener triazine polyurea;
 octadecylureidomelamine grease thickener
 IT **Lubricating grease** additives
 (thickener, octadecylureidomelamine-tolylene diisocyanate
 reaction products as)
 IT **79800-72-9P**
 RL: PREP (Preparation)
 (manufacture of, as thickener for **lubricating**
greases)
 IT 20103-66-6D, reaction products with tolylene diisocyanate
 26471-62-5D, reaction products with octadecylureidomelamine
 RL: USES (Uses)
 (thickener, for **lubricating greases**)

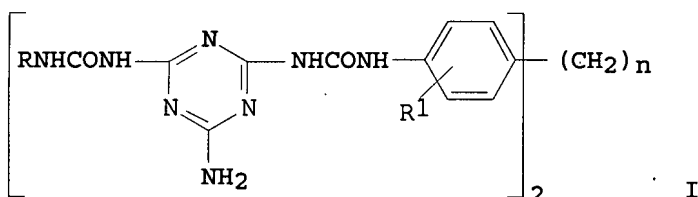
L52 ANSWER 17 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1978:513761 HCAPLUS
 DOCUMENT NUMBER: 89:113761
 TITLE: Triazine-urea grease thickeners
 INVENTOR(S): Wulfers, Thomas F.
 PATENT ASSIGNEE(S): Shell Oil Co., USA
 SOURCE: U.S., 6 pp.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 4026890	A	19770531	US 1975-635532	197511 26
CA 1063110	A1	19790925	CA 1976-265535	197611 12
SE 7613132	A	19770527	SE 1976-13132	197611 24
JP 52065284	A	19770530	JP 1976-141761	197611 24
DE 2653408	A1	19770608	DE 1976-2653408	197611 24
GB 1557319	A	19791205	GB 1976-48966	197611 24
US 4113640	A	19780912	US 1977-852395	197711 17
PRIORITY APPLN. INFO.:			US 1975-635532	A

197511
26<--
US 1977-769252A1
197702
16

GI



AB I (R = C16-22 hydrocarbyl, R1 = H or Me, n = 0 or 1) are effective as high-temperature grease thickeners. These triazine-urea compds. are prepared by the reaction of melamine [108-78-1] with an alkyl isocyanate to give a ureido-s-triazine intermediate, followed by the reaction of the intermediate with a dinuclear aromatic diisocyanate. Thus, a solution of 12.6 g melamine in 120 mL DMF was heated to boiling, and 29.5 g octadecyl isocyanate [112-96-9] was added. The mixture was refluxed 1 h and filtered to give 40 g 4,6-diamino-2-(octadecylureido)-s-triazine (II) [20103-66-6]. 4,4'-Diisocyanato-3,3'-dimethylbiphenyl [91-97-4] was added to 21 g II in 300 mL xylene, and the mixture was refluxed for .apprx.12 h and cooled. Removal of the solvent by a rotary evaporator and washing with ether gave I (R = octadecyl, R1 = Me, n = 0 (III) [67080-23-3]. A grease prepared from 445.0 g neutral oil and 55.0 g III had an ASTM dropping point of 505°F and an ASTM worked penetration (D 217, 60 strokes) of 290.

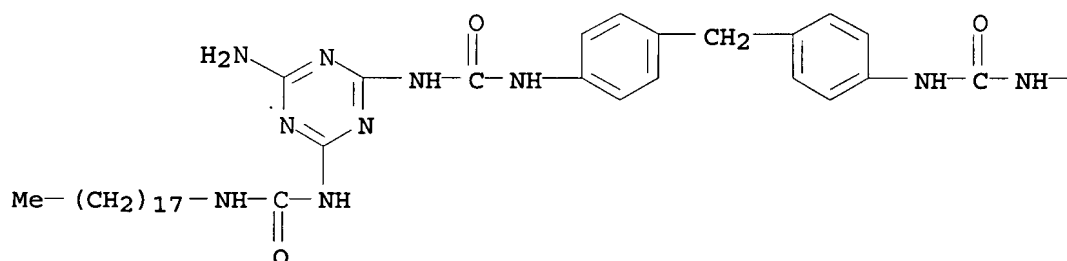
IT 67080-19-7P

RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation and use of, as lubricating grease thickeners)

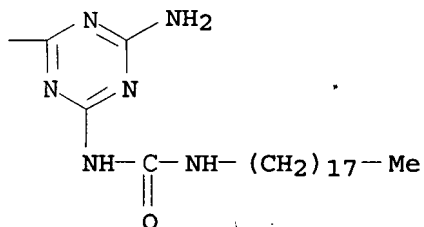
RN 67080-19-7 HCAPLUS

CN Urea, N,N''-(methylenedi-4,1-phenylene)bis[N'-[4-amino-6-
[[(octadecylamino)carbonyl]amino]-1,3,5-triazin-2-yl]- (9CI) (CA
INDEX NAME)

PAGE 1-A



PAGE 1-B



IC C07D251-70
 INCL 260249600
 CC 51-7 (Fossil Fuels, Derivatives, and Related Products)
 Section cross-reference(s): 28
 ST triazine urea grease thickener; **lubricating grease**
 thickener manuf; melamine reaction alkyl isocyanate; ureidotriazine
 prepn reaction
 IT **Lubricating grease** additives
 (thickeners, triazine-urea compds., manufacture of)
 IT 67080-19-7P 67080-20-0P 67080-21-1P
 67080-22-2P 67080-23-3P
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (preparation and use of, as **lubricating grease**
 thickeners)

L52 ANSWER 18 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 1969:39560 HCAPLUS
 DOCUMENT NUMBER: 70:39560
 TITLE: Organo-polysiloxane lubricating oil
 INVENTOR(S): Nitzsche, Siegfried; Riedle, Rudolf; Bauer,
 Ignaz
 PATENT ASSIGNEE(S): Wacker-Chemie G.m.b.H.
 SOURCE: Ger., 4 pp.
 CODEN: GWXXAW
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 1284554		19681205	DE 1966-W41598	196605 17
FR 1522759			FR	
GB 1165784			GB	
US 3423318		19690121	US	196705 16

AB Addition of diurea compds., such as dicyclohexyl-aminenaphthalenediurea to polysiloxane-containing **lubricating greases** for the manufacture of low- and high-temperature lubricants, e.g. 315 g. 1,5-naphthylene diisocyanate are dissolved at 70° in 3 l. perchlorethylene. Thus, 315 g. cyclohexylamine in 1 l.

perchloroethylene was slowly added with agitation, reacted for 2 hrs. at 70°, the diurea compound formed is filtered, washed with solvent, and dried at 1-120°. The dried product is pulverized and mixed on a 3-roll mill with 3100 g. PhMe polysiloxane with trimethylsilyl end groups (viscosity 400 centistokes and n2D5 at 25° 1505) to produce a homogenous, soft paste.

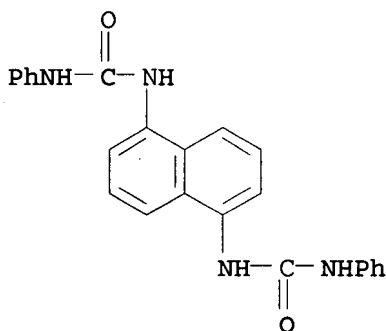
IT 22119-62-6

RL: USES (Uses)

(siloxane-base **lubricating greases** containing)

RN 22119-62-6 HCAPLUS

CN Urea, 1,1'-(1,5-naphthylene)bis[3-phenyl- (8CI) (CA INDEX NAME)



IC C10M

CC 51 (Petroleum, Petroleum Derivatives, and Related Products)

IT Siloxanes, uses and miscellaneous

RL: USES (Uses)

(lubricating greases containing dicyclohexylaminenaphthalenediurea and)

IT **Lubricating greases**

(siloxane-base, containing dicyclohexylaminenaphthalenediurea)

IT 22119-62-6

RL: USES (Uses)

(siloxane-base **lubricating greases** containing)

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Ch 9

L57 ANSWER 1 OF 4 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2003:173728 HCAPLUS

DOCUMENT NUMBER: 138:223986

TITLE: Non-toxic biodegradable **lubricating grease** based on vegetable oils

INVENTOR(S): Beyer, Jorgen Peder; Lindemann, Soren

PATENT ASSIGNEE(S): Abcon Aps, Den.

SOURCE: PCT Int. Appl., 14 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003018729	A1	20030306	WO 2002-DK567	

200208
30

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W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH,
 CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD,
 GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ,
 LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ,
 NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ,
 TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE,
 BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU,
 MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ,
 GW, ML, MR, NE, SN, TD, TG

NO 2004001349

A

20040528

NO 2004-1349

200403
31

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PRIORITY APPLN. INFO.:

US 2001-315933P

P

200108
31

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WO 2002-DK567

W

200208
30

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AB A nontoxic biodegradable grease is disclosed for lubricating mechanisms which are exposed to high load, such as curving rails in railways and wheel flanges on railway cars and locomotives, as well as for lubricating all sorts of equipment working in areas where full biodegradability is required such as in agriculture, forestry, sports areas and marine environments. The grease comprises a glyceride oil, one or more stearates, one or more long chain esters, bentonite, and a meal. Where the grease is exposed to daylight, it usually further comprises an antioxidant, and to further enhance the lubricating capacity of the grease a small amount of polytetrafluoroethylene (PTFE) may be added.

IC ICM C10M169-04

CC 51-8 (Fossil Fuels, Derivatives, and Related Products)

Section cross-reference(s): 45

ST nontoxic biodegradable grease machine railway vegetable oil stearate clay; **lubricating grease** biodegradable oil
additive chelating agent thickener PTFE

IT **Lubricating grease** additives

(antioxidants; non-toxic biodegradable grease based on vegetable oils)

IT **Lubricating grease** additives

(extreme-pressure; non-toxic biodegradable grease based on vegetable oils)

IT Railways

(greases for; non-toxic biodegradable **lubricating grease** based on vegetable oils)

IT Antioxidants

(lubricating grease additives; non-toxic biodegradable grease based on vegetable oils)

IT Biodegradable materials

Lubricating greases(non-toxic biodegradable **lubricating grease** based on vegetable oils)

IT Fluoropolymers, uses

RL: MOA (Modifier or additive use); TEM (Technical or engineered

material use); USES (Uses)

(powder; non-toxic biodegradable **lubricating grease** based on vegetable oils)

IT 50-81-7, Ascorbic acid, uses 50-81-7D, Ascorbic acid, esters of
77-92-9, Citric acid, uses 77-92-9D, Citric acid, esters with
mono- and di-glycerides 7664-38-2, Phosphoric acid, uses
7664-38-2D, Phosphoric acid, esters of

RL: MOA (Modifier or additive use); TEM (Technical or engineered
material use); USES (Uses)

(metal chelating agent; non-toxic biodegradable
lubricating grease based on vegetable oils)

IT 57-11-4D, Stearic acid, metal salts 108-32-7, Propylene carbonate
121-79-9, n-Propyl gallate 121-79-9D, n-Propyl gallate, esters
with mono- and di-glycerides 122-39-4, Diphenylamine, uses
128-37-0, BHT, uses 557-04-0, Magnesium stearate 557-05-1, Zinc
stearate 1592-23-0, Calcium stearate 4485-12-5, Lithium stearate
7732-18-5, Water, uses 25013-16-5, BHA

RL: MOA (Modifier or additive use); TEM (Technical or engineered
material use); USES (Uses)

(non-toxic biodegradable **lubricating grease**
based on vegetable oils)

IT 9002-84-0, **Polytetrafluoroethylene**

RL: MOA (Modifier or additive use); TEM (Technical or engineered
material use); USES (Uses)

(powder; non-toxic biodegradable **lubricating grease**
based on vegetable oils)

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN
THE RE FORMAT

L57 ANSWER 2 OF 4 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1996:284455 HCAPLUS

DOCUMENT NUMBER: 124:321261

TITLE: Urea compound-containing **lubricating grease** for high temperatures

INVENTOR(S): Schreiber, Hans; Seigert, Peter; Konegen,
Herbert; Hildebrandt, Wolfgang

PATENT ASSIGNEE(S): Gkn Automotive Ag., Germany

SOURCE: Ger. Offen., 12 pp.

CODEN: GWXXBX

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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DE 19530504	A1	19960314	DE 1995-19530504	199508 18
			<--	
DE 19530504	C2	19970911		
US 5670461	A	19970923	US 1995-515287	199508 15
			<--	
JP 08170091	A	19960702	JP 1995-209743	199508 17

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JP 2911789 B2 19990623
 FR 2723747 A1 19960223 FR 1995-9933
199508
18

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FR 2723747 B1 19970905
 ES 2106681 A1 19971101 ES 1995-1668
199508
18

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ES 2106681 B1 19980701
 PRIORITY APPLN. INFO.: DE 1994-4429507 A1
199408
19

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DE 1994-4437742 A1
199410
21

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AB The **lubricating grease** on the basis of mineral and/or synthetic oils contains urea **compds.** as **thickeners**, dispersed MoS2 **powder**, graphite, **polytetrafluoroethylene**, ≥1 Mo organic compound (e.g., Mo dithiophosphate, Mo dithiocarbamate), and conventional lubricating oil additives. The (MoS2 + graphite + polytetrafluoroethylene + Mo organic compound) content in the grease is 2-5 weight%. Typically, the urea compound is prepared from primary C8-22 fatty amines and isocyanate.

IC ICM C10M169-06
 ICS C10M119-24; C10M125-22; C10M125-02; C10M147-02; C10M139-00

ICI C10M169-06, C10M115-08, C10M125-22, C10M125-02, C10M147-02, C10M139-00, C10M135-36, C10N050-10, C10N040-04

CC 51-8 (Fossil Fuels, Derivatives, and Related Products)

ST **lubricating grease** urea compd contg

IT **Lubricating greases**
 (urea compound-containing **lubricating grease** for high temps.)

IT Amines, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (fatty, tallow, hydrogenated; reaction product with diphenylmethanediisocyanate in urea compound-containing **lubricating grease** for high temps.)

IT 101-68-8D, 4,4'-Diphenylmethanediisocyanate, reaction product with hydrogenated tallow fatty amines 1072-71-5, 1,3,4-Thiadiazolidine-2,5-dithione 9002-84-0, Polytetrafluoroethylene 15834-33-0D, Dithiophosphoric acid, molybdenum salt 176255-30-4
 RL: NUU (Other use, unclassified); USES (Uses)
 (in urea compound-containing **lubricating grease** for high temps.)

IT 1317-33-5, Molybdenum sulfide, uses 7782-42-5, Graphite, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (powder; in urea compound-containing **lubricating grease** for high temps.)

L57 ANSWER 3 OF 4 HCAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 1980:570905 HCAPLUS
 DOCUMENT NUMBER: 93:170905
 TITLE: Solid lubricants for break-in of bearings
 PATENT ASSIGNEE(S): Sankyo Oilless Industries, Inc., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 3 pp.

DOCUMENT TYPE: CODEN: JKXXAF
 LANGUAGE: Patent
 FAMILY ACC. NUM. COUNT: Japanese
 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 55082196	A	19800620	JP 1978-154098	19781215

PRIORITY APPLN. INFO.: <-- JP 1978-154098 A 19781215

AB The title lubricants for prevention of the failure of bearing materials during the initial stage of usage are mixts. containing 80-95 weight% Ca soap grease (e.g., cup grease) and 5-20 weight% **powdered polytetrafluoroethylene** (I) [9002-84-0], MoS₂, and(or) graphite. Thus, a solid lubricant containing Ca soap grease 85, MoS₂ 12, and I 3 weight% had a frictional coefficient about one-half that of a com. cup grease when the lubricant and the grease were tested under similar conditions.

IC C10M005-16; C10M005-02; C10M005-18; F16N015-00

CC 51-7 (Fossil Fuels, Derivatives, and Related Products)

IT **Lubricating greases**
 (calcium-base, solid compns. containing, for breaking-in of bearings, properties of)

IT **Lubricating grease additives**
 (thickeners, calcium soaps, solid lubricants containing, for breaking-in of bearings)

L57 ANSWER 4 OF 4 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1974:523957 HCAPLUS

DOCUMENT NUMBER: 81:123957

TITLE: Poly(tetrafluoroethylene) and fluorinated ethylene-propylene **grease lubricants**

AUTHOR(S): Christian, John B.; Arkles, Barry

CORPORATE SOURCE: Air Force Mater. Lab., Wright-Patterson Air Force Base, OH, USA

SOURCE: Lubrication Engineering (1974), 30(3), 136-43

CODEN: LUENAG; ISSN: 0024-7154

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The stability of greases produced from perfluoroalkyl ether and trifluoropropylmethyl polysiloxane oils thickened by poly(tetrafluoroethylene) (PTFE) and fluorinated ethylene-propylene copolymer (FEP) under extreme conditions at high speeds and high loads over extended periods of time were studied. Com. PTFE and FEP powders were evaluated. The most stable greases were produced from the tetrafluoroethylene lubricant solids having the smallest particle size, the highest oil absorption and surface area, and the highest critical surface tension with respect to the surface tension of the oil. Oil absorption correlated directly with critical surface tension and surface area. Separation and penetration values were in agreement with predictions, based on **fluorocarbon**

powder data. The greases were also evaluated for wear properties and are suitable for many aerospace applications.

CC 51-7 (Fossil Fuels, Derivatives, and Related Products)

Section cross-reference(s): 37

ST **lubricating grease** thickener fluorinated polymer; polytetrafluoroethylene **lubricating grease** thickener; FEP **lubricating grease** thickener; siloxane fluoro **lubricating grease**; ether fluoro **lubricating grease**

IT Perfluoro compounds

RL: USES (Uses)

(**lubricating greases** containing)

IT Ethers, uses and miscellaneous

RL: USES (Uses)

(perfluoroalkyl, **lubricating greases**, thickeners for)

IT **Lubricating grease additives**

(**thickeners**, fluorinated polymers)

IT Siloxanes and Silicones, uses and miscellaneous

RL: USES (Uses)

(trifluoropropylmethyl, **lubricating greases**, thickeners for)

IT 9002-84-0 25067-11-2

RL: USES (Uses)

(**lubricating grease thickeners**)

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